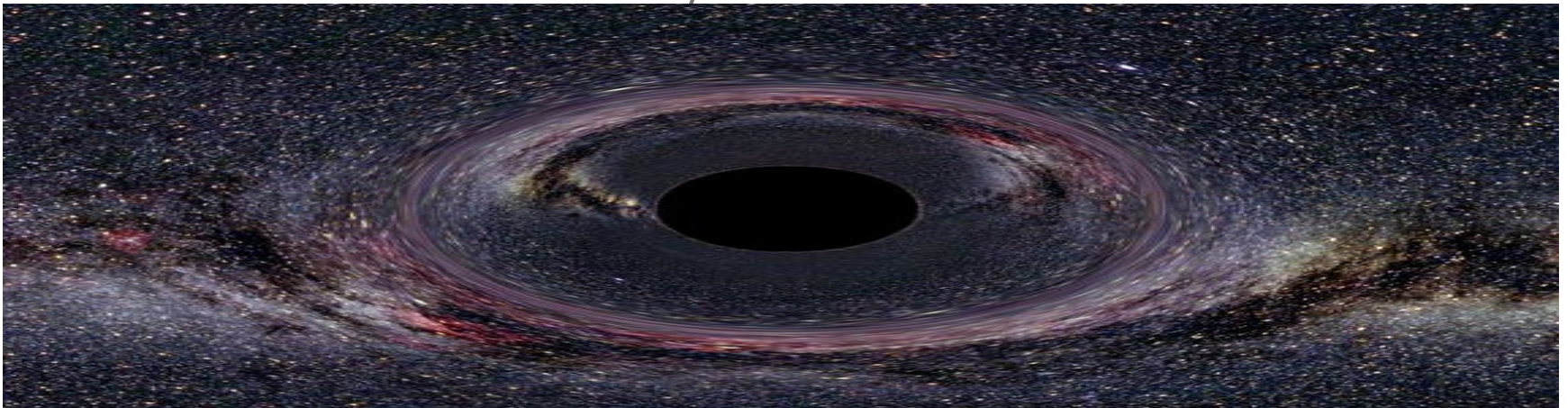


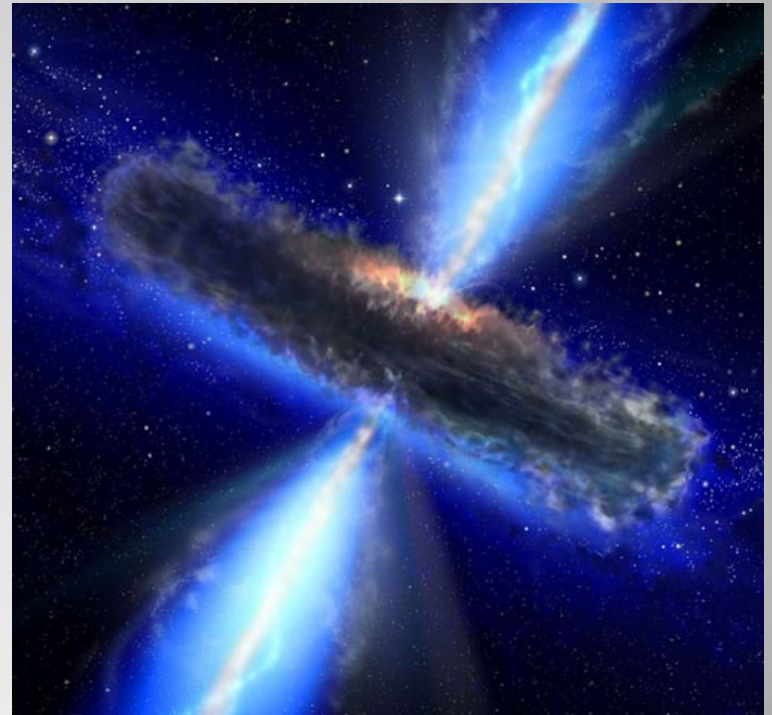
Creating a Technological Singularity in Your Organization



Troy E. Sybert, M.D., M.P.H.
Vice President/Chief Medical Information Officer



- Gravitational Singularity:
 - Gravitational Explosions/ Black Holes
- Technological Singularity:
 - Intelligence Explosion (I.J. Good; 1965)

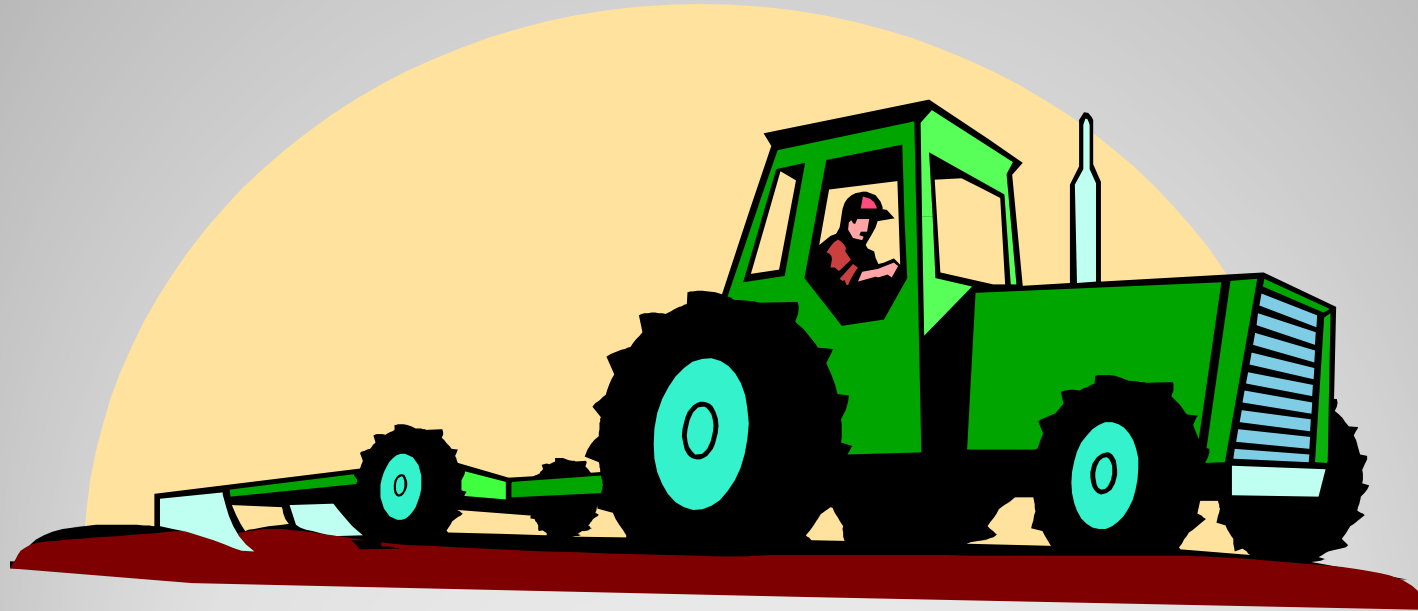


Singularity

Objectives

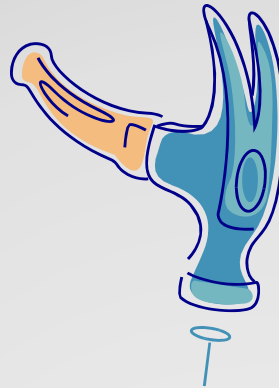
- Standardize processes
- Implement components of an EMR (CPOE)

- Perspective
- Change Management
- Intelligent Design



Objectives

Natural Resources → Simple Tools



Technology: What is It?

Does it Improve the Human Condition??

Anarcho-Primitivism → NO

Techno-Progressivism → YES

Technology: Human Condition?



Physical Exam

Early Medicine Technology



Open MRI Imaging
Technology

Current Medicine Technology



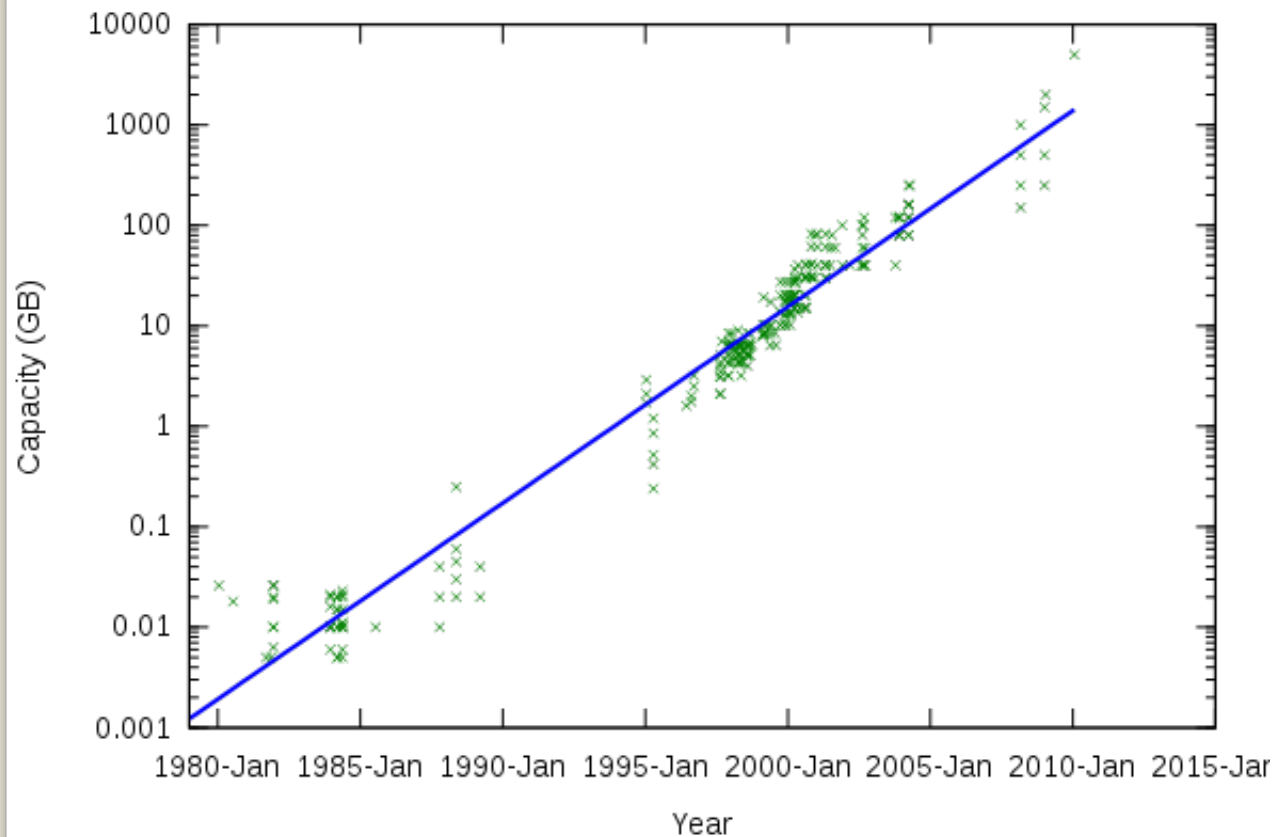
Medical TriCorder

Next Generation: 2260



Medical TriCorder

After the Singularity....2379



Kryder's Law

Gigabyte 10^9

Terabyte 10^{12}

Petabyte 10^{15}

Exabyte 10^{18}

Zettabyte 10^{21}

Yottabyte 10^{24}

How Much is Enough?

- Why?
- Why?
- Why?
- Why?
- Why?



What is the End Goal?

- 
- How should we approach technology in our businesses?

→ especially non-profits (<5% margins)?

- Temperance...
- Caution at fringes... (risky at fringes)
- Committed to progress...
- With our core mission and values guiding the decision...

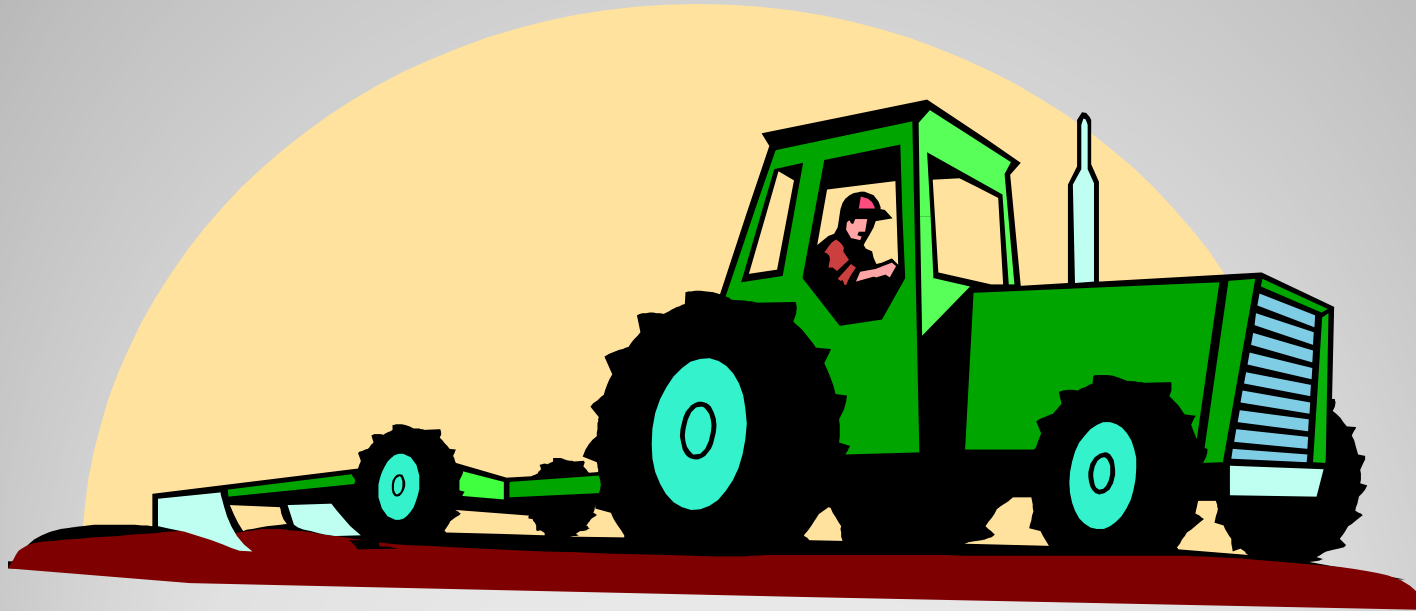
Perspective

Whose Line Is It Anyway?



**It's the
Patient's
Journey**

- ~~Perspective~~
- Change Management
- Intelligent Design



Objectives

Workplace Evolution

- Perhaps not faster, but certain volume




Most Challenging Need

Human Behavior... Can we ever understand it??

- Reliable
 - Reproducible
 - Rigid
 - Relentless
 - Rugged
-
- Cigarette Tax
 - Incentives/Penalties for Electronic Data Infrastructure

Need Proactive Strategy

- 
- **Precontemplation**: no intention to act in the near future (six months), due to lack of information or demoralization from past attempts
 - **Contemplation**: intention to change in the near future; aware of pros and cons of changing
 - **Preparation**: intention to take action in the immediate future (1 month); have a plan of action
 - **Action**: overt action taken within the last 6 months
 - **Maintenance**: work to prevent relapse; less temptation and more confidence
 - **Termination**: no temptation and 100% self efficacy

Stages of Change Model of Human Behavior Change

Incidence of ADRs (Meta-Analysis)

	95% Confidence Interval
All Severities of ADRs	12%-18%
Serious ADRs*	5%-8%
Fatal ADRs**	0.2%-0.4%
*requires hospitalization, prolongs the hospitalization, creates permanent disability, results in death	
** Between 4 th and 6 th leading cause of death (1994) in the United States	

•Lazarou et al,. *Incidence of Adverse Drug Reactions in Hospitalized Patients.*
JAMA, April 15, 1998—Vol 279, No. 15


Costs and Quality of ADRs

Annual Costs to a 700 Bed Hospital

- All ADRs: \$5.6 million
- Preventable ADRs: **\$2.8 million**

Of patients having an ADR, the risk of death is increased **1.5 to 2.2 times** that of patients not having an ADR.

•Bates et al,. The Costs of Adverse Drug Events in Hospitalized Patients;
JAMA, January 22/29, 1997—Vol 277, No. 4

- 
- **Precontemplation**: no intention to act in the near future (six months), due to lack of information or demoralization from past attempts
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Stages of Change Model of Human Behavior Change

EMR/CPOE Breadth

CURRENT



FUTURE



DENIAL & SHOCK

"I feel fine."; "This can't be happening, not to me."

- ❖ a temporary defense for the individual,
- ❖ generally replaced with heightened awareness of vacancies,
- ❖ may have numbed disbelief,
- ❖ deny the reality of the loss at some level, in order to avoid the pain,
- ❖ shock provides emotional protection from being overwhelmed all at once,
- ❖ This may last for weeks.

PAIN & GUILT

"Wish we could have spent more time together."

- ❖ shock replaced with the suffering of unbelievable pain,
- ❖ it is important that you experience the pain fully, and not hide it, avoid it or escape from it with alcohol or drugs,
- ❖ guilty feelings/remorse over things you did or didn't do with your loved one,
- ❖ Life feels chaotic and scary during this phase.



The Death of the Paper Chart

ANGER & BARGAINING

"Why me? It's not fair!", "Who is to blame?", "I will never drink again if you just bring it back!"

- ❖ individual recognizes that denial cannot continue,
- ❖ angry person is difficult to care for due to misplaced feelings of rage and envy,
- ❖ any individual that symbolizes life or energy is subject to projected resentment and jealousy,
- ❖ try to bargain in vain with the powers that be for a way out of your despair.

DEPRESSION, REFLECTION, LONELINESS

"I'm so sad, why bother with anything?"; "I'm going to die... What's the point?"

- ❖ a long period of sad reflection,
- ❖ not to be "talked out of it" by well-meaning outsiders as encouragement from others is not helpful,
- ❖ realize the true magnitude of loss, resulting in a sense of depression and emptiness,
- ❖ isolate oneself on purpose, reflect on things you did, and focus on memories of the past.



The Death of the Paper Chart

THE UPWARD TURN, ACCEPTANCE, & HOPE

"It's going to be okay."; "I can't fight it, I may as well prepare for it."

- ❖ adjusting to life without, life becomes a little calmer and more organized,
- ❖ physical symptoms lessen, and "depression" begins to lift slightly,
- ❖ begin to reconstruct one's life without the departed,
- ❖ accept and deal with the reality of your situation,
- ❖ No turning back, but you will find a way forward.



The Death of the Paper Chart

“It is not necessary to change. Survival is not mandatory.” W. Edwards Deming

In corporations and public sectors, 60-70% of change initiatives fail. John Kotter

Change Management programs are like diets, a lot of them work...just pick one and tenaciously stick with it. Troy Sybert

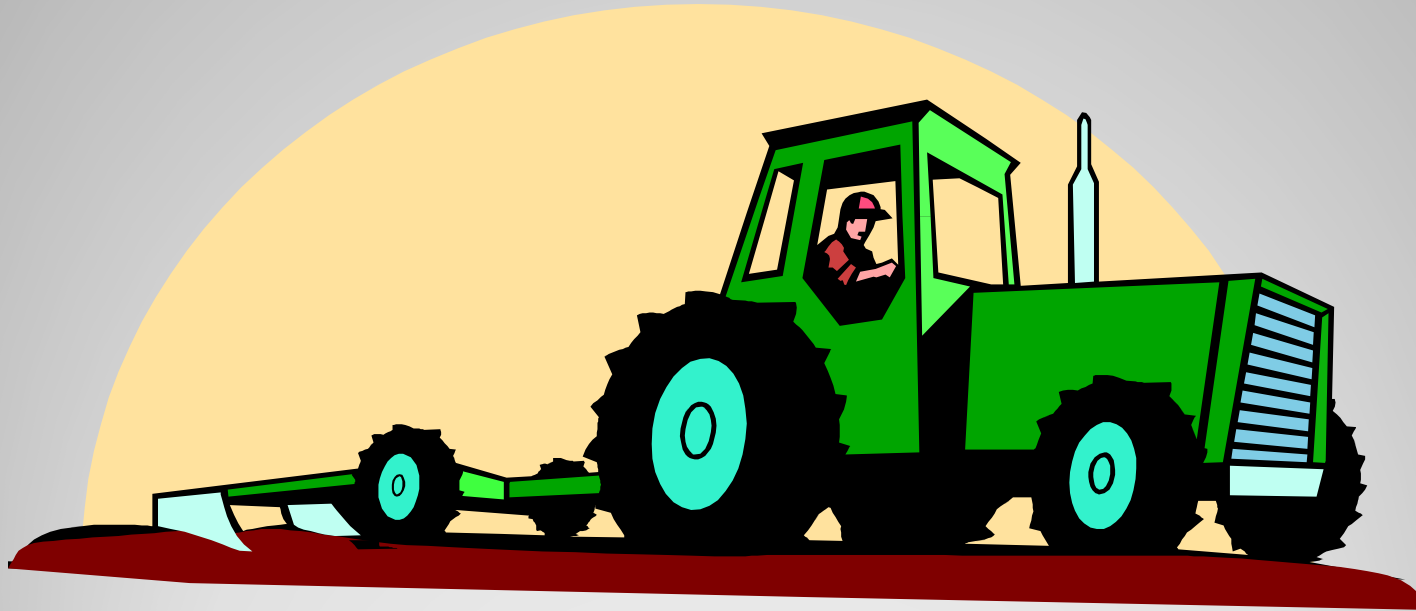
Sayings...

some famous and some not!

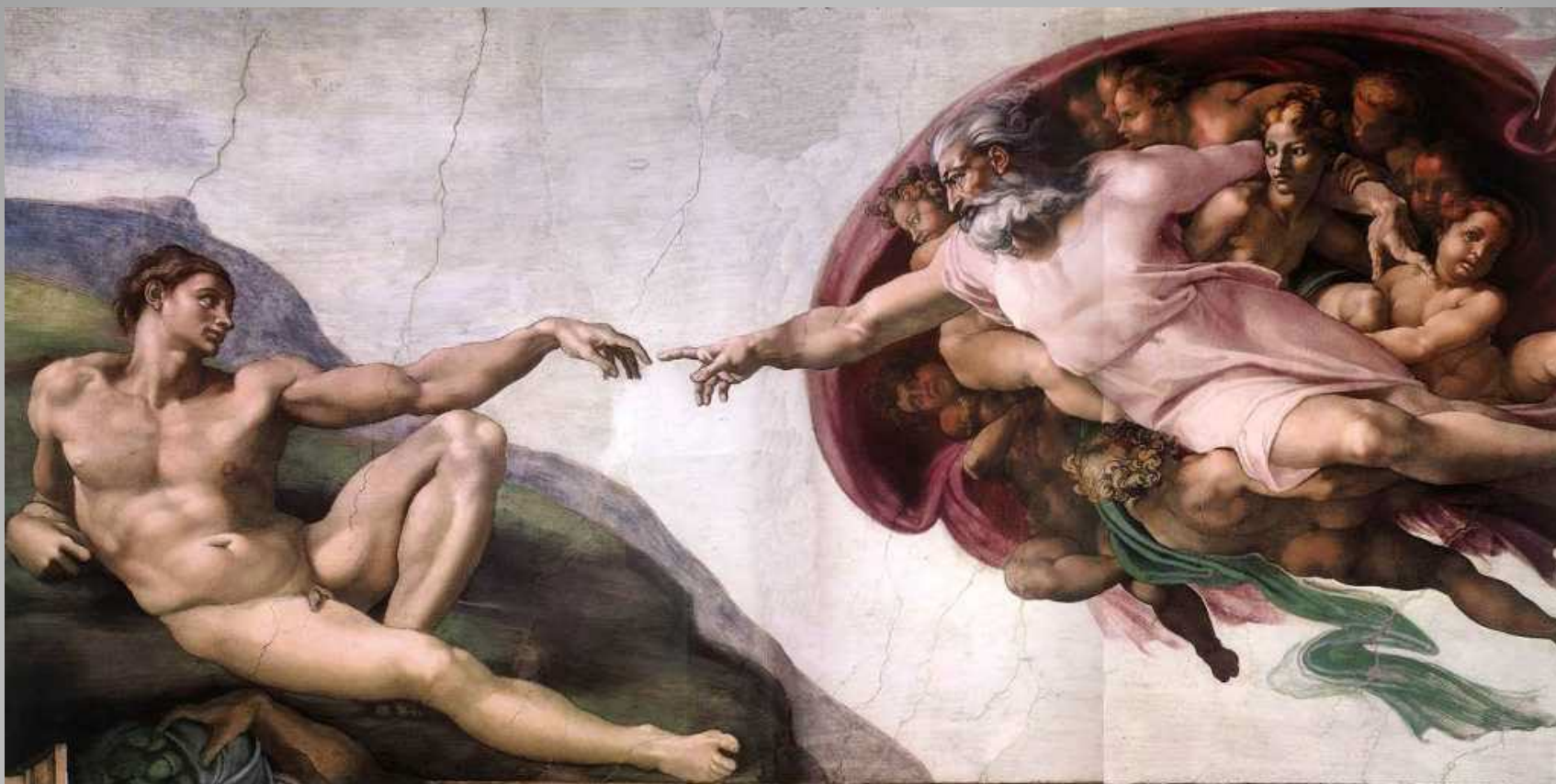
- Step 1: Create a Sense of Urgency
- Step 2: Pull Together the Guiding Team
- Step 3: Develop the Change Vision & Strategy
- Step 4: Communicate for Buy-in
- Step 5: Empower Others to Act
- Step 6: Produce Short-term Wins
- Step 7: Don't Let Up
- Step 8: Anchor the New Change in the Culture

Kotter's Organizational Change

- ~~Perspective~~
- ~~Change Management~~
- Intelligent Design



Objectives



Intelligent Design

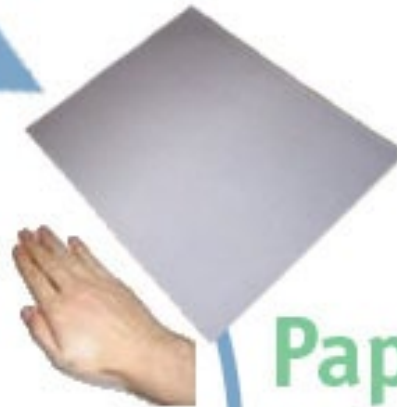
Scissors

beats paper



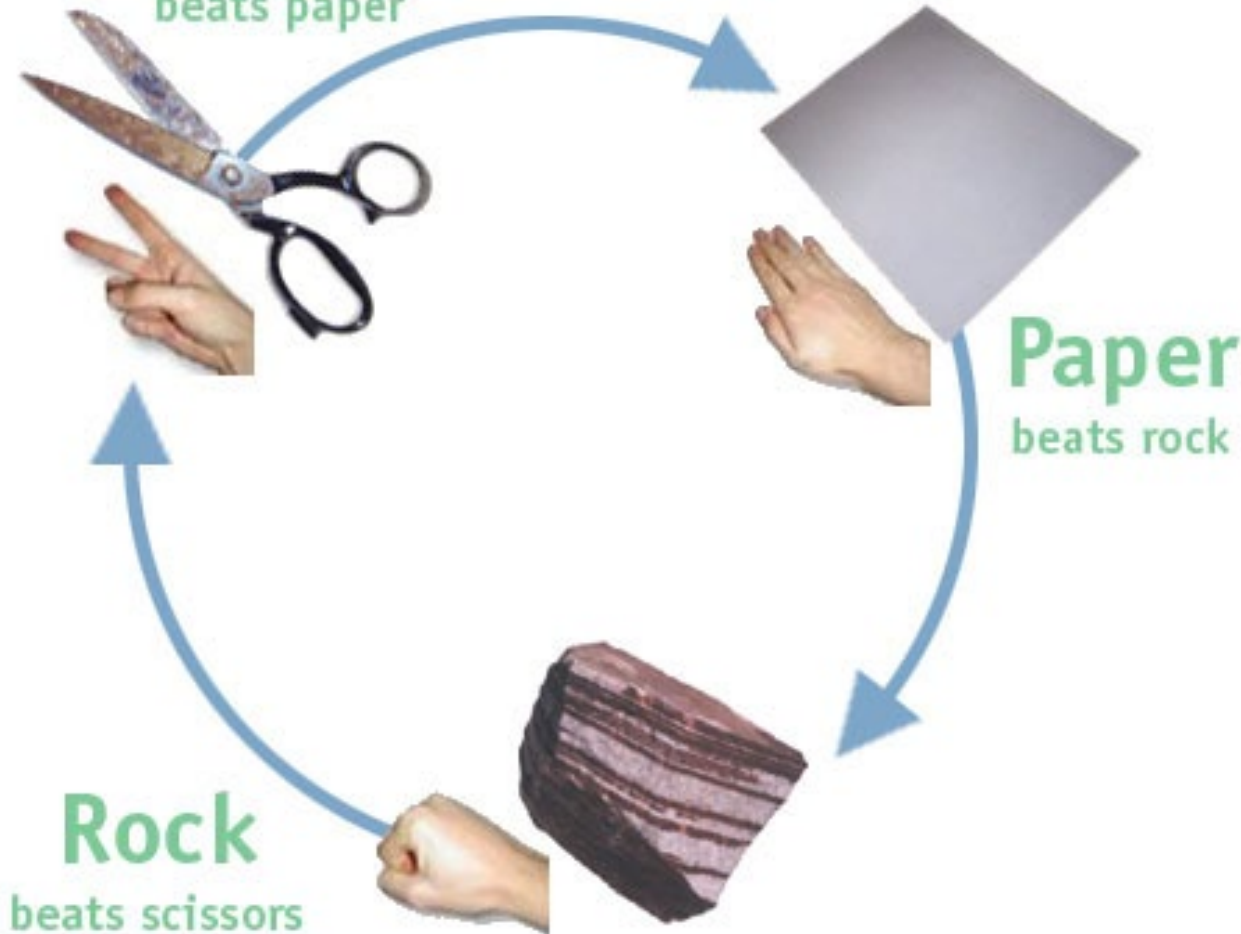
Paper

beats rock



Rock

beats scissors



Computer
Controls MRI



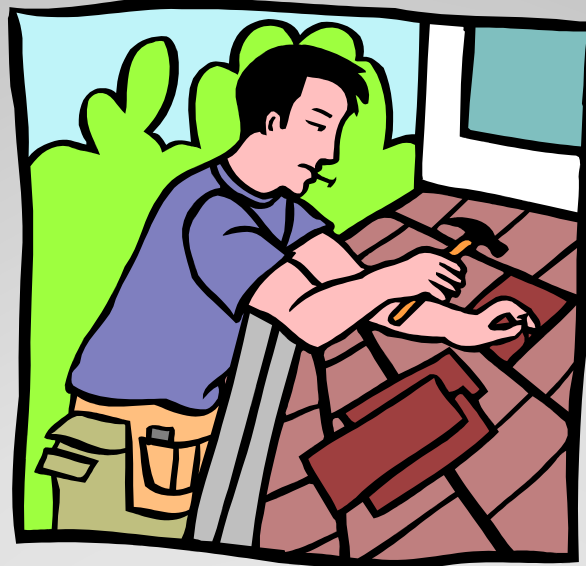
Hammer
Smashes computer



MRI
Immobilizes hammer

What good is an MRI to a roofing contractor?

(unless he/she falls off the roof!)



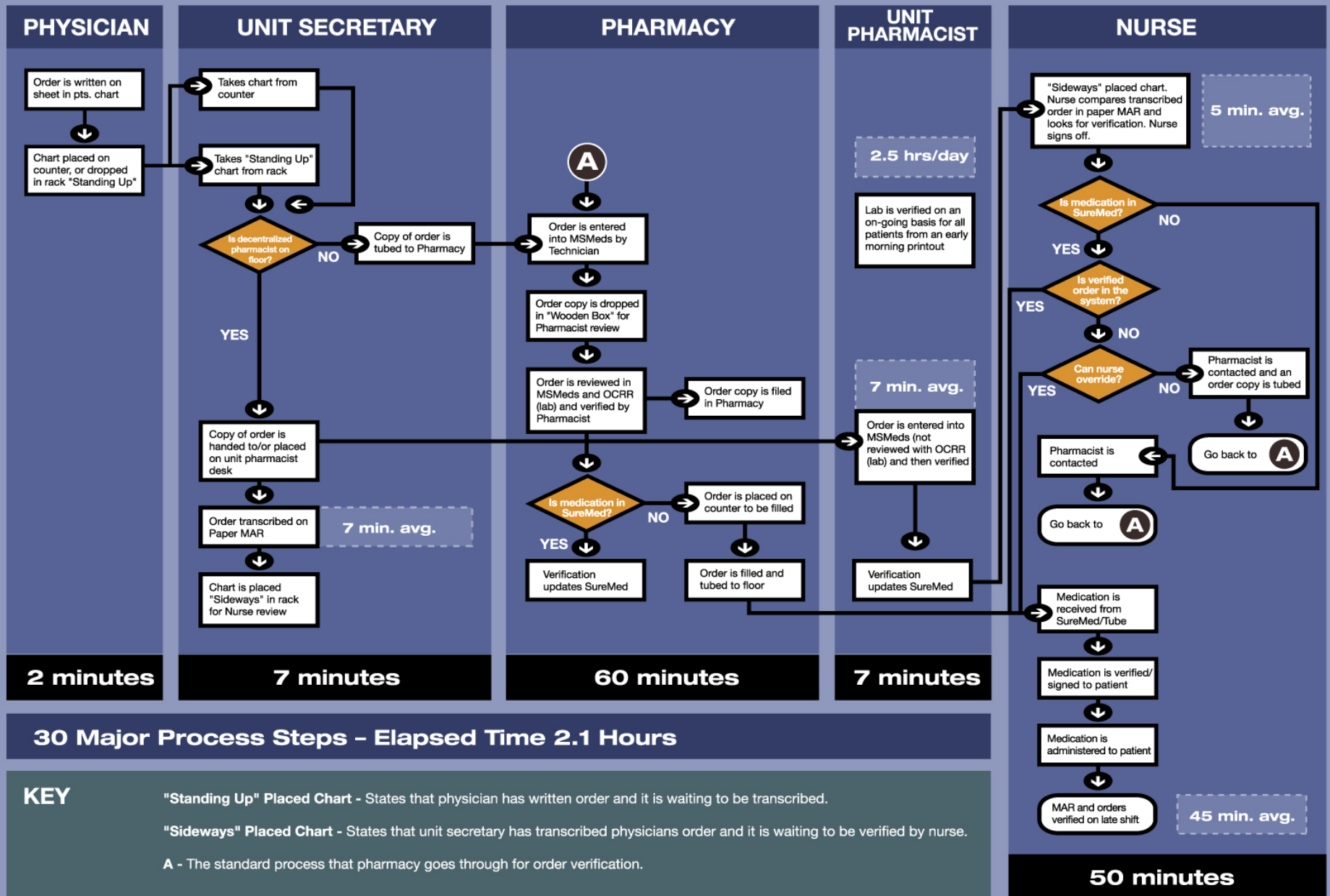
Roofing contractors need hammers!

Focus of Utility

- Automating bad processes continues to lead to bad outcomes.
- Not always the biggest and best, but the smartest.
- Not more resources, but wise resources.
- Electronic Medical Record with no plan
 - Users to adopt
 - Patients to benefit

Outcomes Based-Core Mission

Current Medication Order Process



Comprehensive Medication Order Process

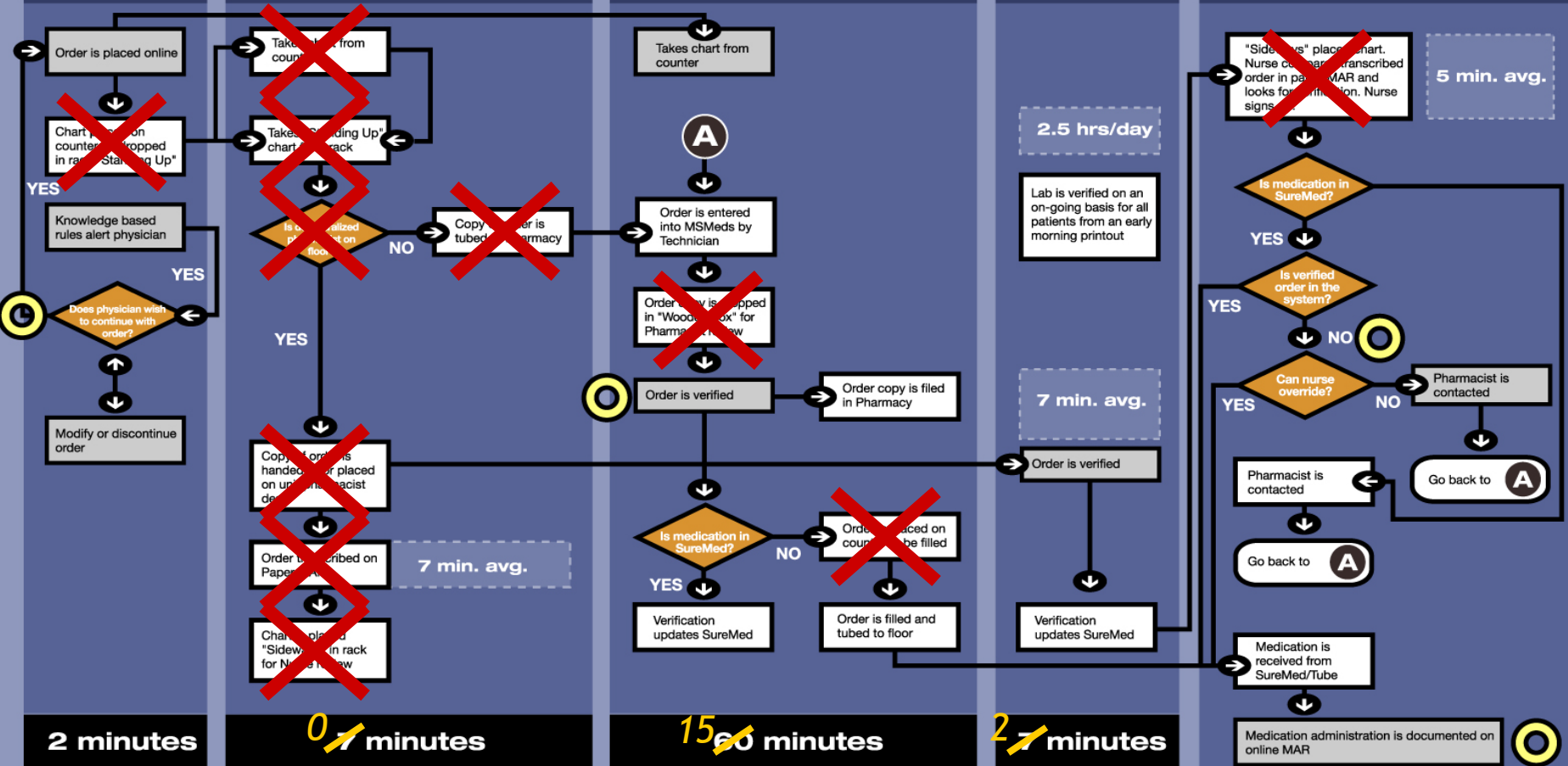
PHYSICIAN

UNIT SECRETARY

PHARMACY

UNIT PHARMACIST

NURSE



KEY

"Standing Up" Placed Chart - States that physician has written order and it is waiting to be transcribed.

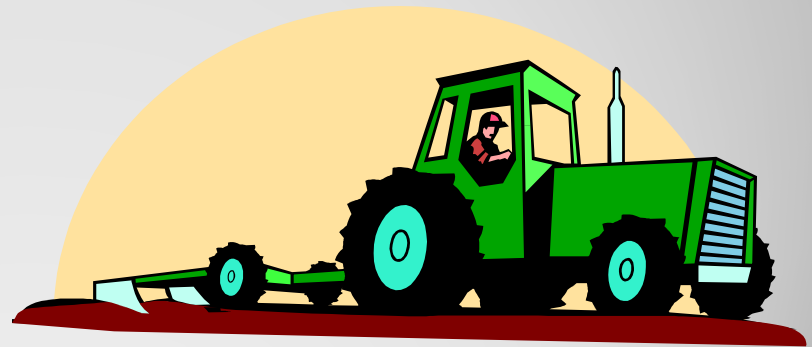
"Sideways" Placed Chart - States that unit secretary has transcribed physicians order and it is waiting to be verified by nurse.

A - The standard process that pharmacy goes through for order verification.

20 ~~50~~ minutes

- Perspective
→ **Core Mission Must Guide**
- Change Management
→ **Proactive Strategy**
- Intelligent Design
→ **Sometimes it's a Hammer, not an MRI!**

Objectives



Questions!!

