Engineering Solutions
The Human Factor

“If you build it, they won’t necessarily come.”

Celia Ann H. Pfleckl
Director, Portfolio Management
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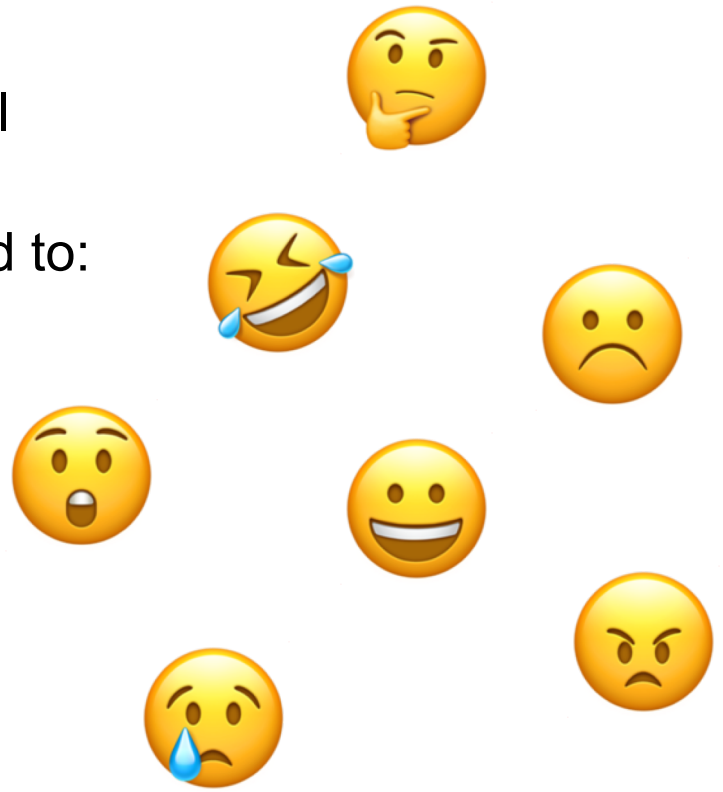
Four Questions: Human Factor in Design, a Project Management Perspective

- What is the “Human Factor”?
- Why is it important to us as project managers?
- How do we ensure we get it right?
- What happens if we get it wrong?

What is the “Human Factor”?

Human Behavior

- Responses of individuals or groups to internal and external stimuli
- Includes both physical and emotional responses
- Influences include, but are not limited to:
  - Thoughts
  - Feelings
  - Attitudes
  - Values
  - Experiences
  - Social interaction
  - Culture



Consider These Two Examples

- Queuing
  - Configuration
  - Position in line
  - Wait time

- Traffic
  - Moving versus sitting
  - Stoplights
  - Expectations of travel times

Human Factor Engineering

- According to the Merriam Webster dictionary, human factors or human engineering is defined as *an applied science concerned with designing and arranging things people use so that the people and things interact most efficiently and safely.*

- Focuses on human beings and their interaction with:
  - Machines
  - Materials
  - Information
  - Procedures
  - Environments

Why is it important to us as project managers?

User Adoption

- Your user wants a product or infrastructure that is:
  - Simple and intuitive…user friendly!
  - Aesthetically pleasing
  - Functional
  - Safe
  - Convenient
- Your user does not want a product or infrastructure that is:
  - Confusing
  - Offensive
  - Impractical
  - Dangerous
  - Frustrating

Consider These Examples of Poor Design

- A street crossing marker that turns crossing the street into a puzzling and frustrating experience

- The trash couch for the truly dedicated recycler who doesn't let the basic rules of interior design, or human nature, affect their style

And These…

- A phone that requires you to forget everything you know about typing

- An elevator interface that that is also a fun guessing game

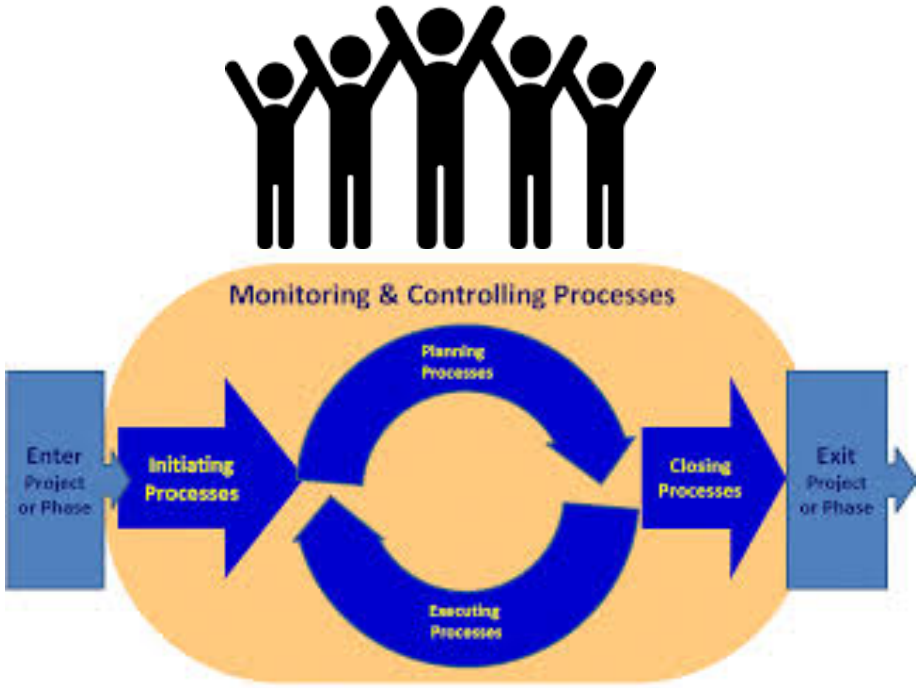
Consider These Examples of Good Design

- The sit to stand desk was designed so you can work in different positions
- A mug which allows both you and your fingers to wake up while consuming morning coffee
- A tin can opener that helps you save your nails

How do we ensure we get it right?

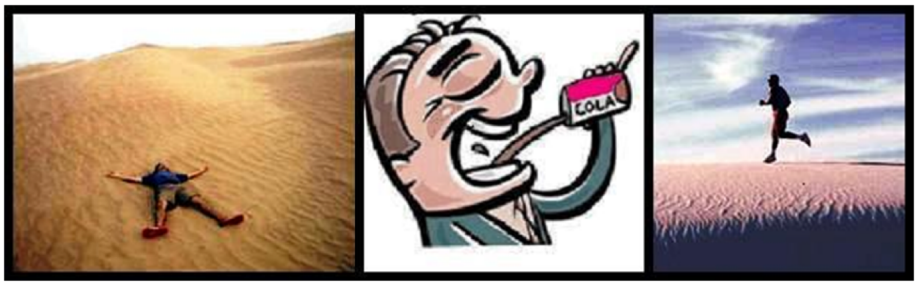
Within the Project Lifecycle

- The human factor should be a consideration from the very beginning and throughout the project lifecycle.
- There are times when it may be particularly important:
  - During stakeholder identification
  - During the collection of requirements
  - During schedule development
  - As part of all project quality management processes
  - During lessons learned

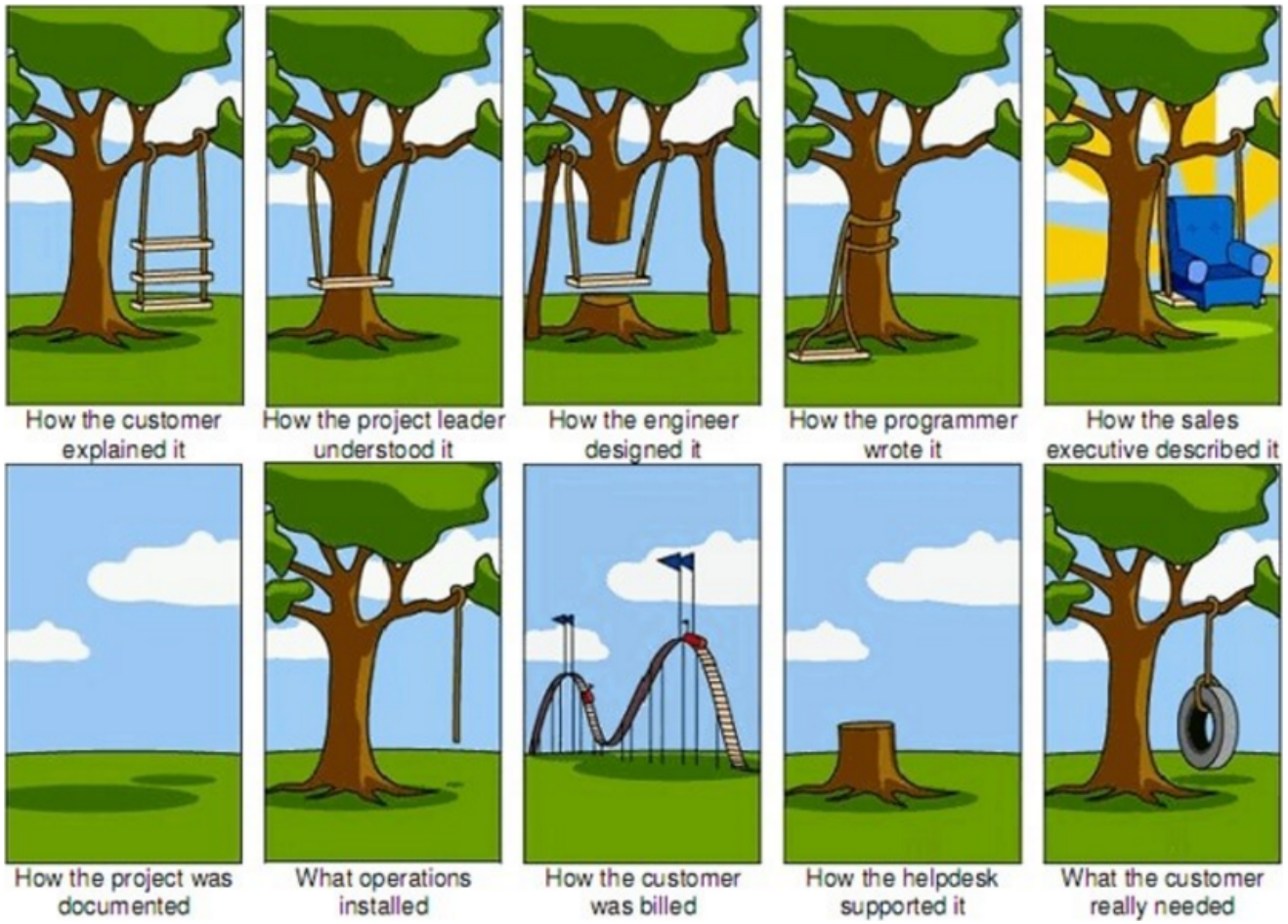


Stakeholder Identification

- Regardless of the tools and techniques used to identify and analyze stakeholders, ***do not forget your end user or customer***.
- Consider those with different needs and backgrounds when constructing your stakeholder group. Examples include those:
  - With disabilities
  - From different cultural backgrounds
  - With different family situations
- Example - Customer experience considerations for trainset design



Collection of Requirements



Schedule Development

- Ensure activities include adequate points of feedback solicitation on human factors
- Ensure enough time has been allocated to collect and digest feedback
- Make sure predecessor and successor activities are properly sequenced to allow incorporation of human factor feedback into the design
- Don’t just check the box! Plan to use the feedback you get.

Project Management Quality Processes

- Plan Quality Management
  - Identify the human factor quality requirements
  - Determine how quality with regard to human factors will be managed and validated
- Perform Quality Assurance
  - Ensure quality standards and metrics are in place with regard to human factors
  - Support continuous improvement
- Control Quality
  - Recommend changes to eliminate any causes of poor quality as related to human factors
  - Validate that deliverables meet human factor requirements

What happens if we get it wrong?

Consequences of Getting It Wrong…

- Negative impact to reputation
- Negative impact to revenue
- Unsafe conditions for human health and safety
- Frustrated, irritated, confused, and/or angry end users or customers
- No one will use what you have produced!!!

A Few Final Examples of Flawed Designs

A Few Lessons Learned…

- Don’t expect end users or customers to deviate from expected behavior unless there is a very good reason.
- Don’t overload your end user or customer with information.
- Take steps to ensure you don’t inadvertently offend your end user or customer.
- Ensure from the beginning of the project lifecycle that human factors are considered; solicit and use feedback.
- Make sure you capture lessons learned! Don’t make the same mistake twice.

QUESTIONS?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