Panel Presentation on Project Management Principles

Sponsored by PSAIChE and SWE-PNW

October 20, 2010

University of Washington

UW-AIChE, SWE and EWB

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Introduction to Panelists

- Ricole Johnson, MBA, PMP | *Starbucks Coffee Company* | Senior Engineer
- Randy Lord | *Boeing* | 747-8i Insulation Blankets Project Manager
- Scott Tavaglione, PE | *GE Water & Process Technologies* | Project Engineer
- Kalan Guiley| *Boeing* | Guidance, Control and Navigation Engineer, 747-8 High Lift Systems

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Presentation Topics

- Ricole – *Introduction to Project Management Principles*
- Randy – *15 Questions*
- Scott – *Engineering the Project: Team Roles in Managing Projects*
- Kalan – *PM in Action: Lessons Learned*

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Introduction to Project Management Principles

Ricole Johnson, MBA, PMP
Senior Engineer
Starbucks Coffee Company, Global Engineering

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University of Washington

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Outline

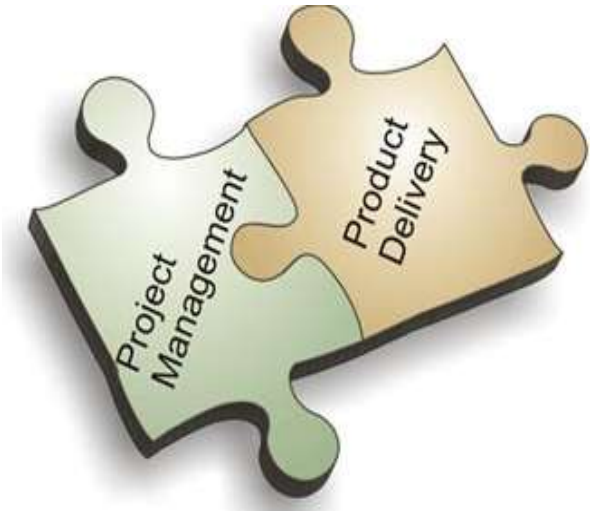
I. Definitions and Assumptions

II. Project Management Process

III. Project Success Criteria

IV. 10 Key Principles

V. Final Thoughts



Definitions and Assumptions

Ref: PMBOK Guide, 4th Ed.

What is a PROJECT?

*A **temporary** endeavor undertaken to create a **unique** product, service or result.*

What is PROJECT MANAGEMENT?

*The **application** of knowledge, skills, tools, and techniques to project activities to meet project requirements.*

What is a PROJECT MANAGER?

*The **individual responsible** for accomplishing project objectives.*

KEY ASSUMPTIONS

- ✓ *Consistent for any type of project, across any industry*
- ✓ *Project alignment with organizational strategy*
- ✓ *Project Management Body of Knowledge (PMBOK) accepted global standard*

Project Management Delivers Value

Manufacturing

New Product Development

Retail Store Development

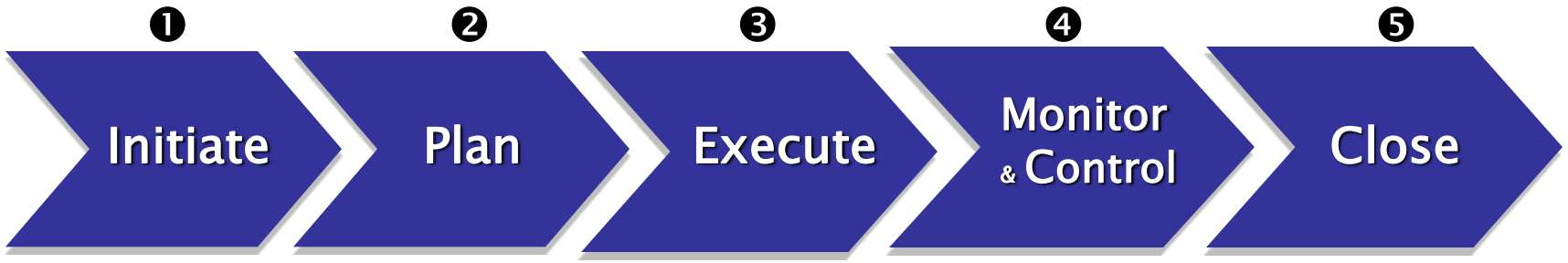
Information Technology

Mission

"To inspire and nurture the human spirit -
one person, one cup and one neighborhood at a time"

Project Management Process

Ref: PMBOK Guide, 4th Ed.

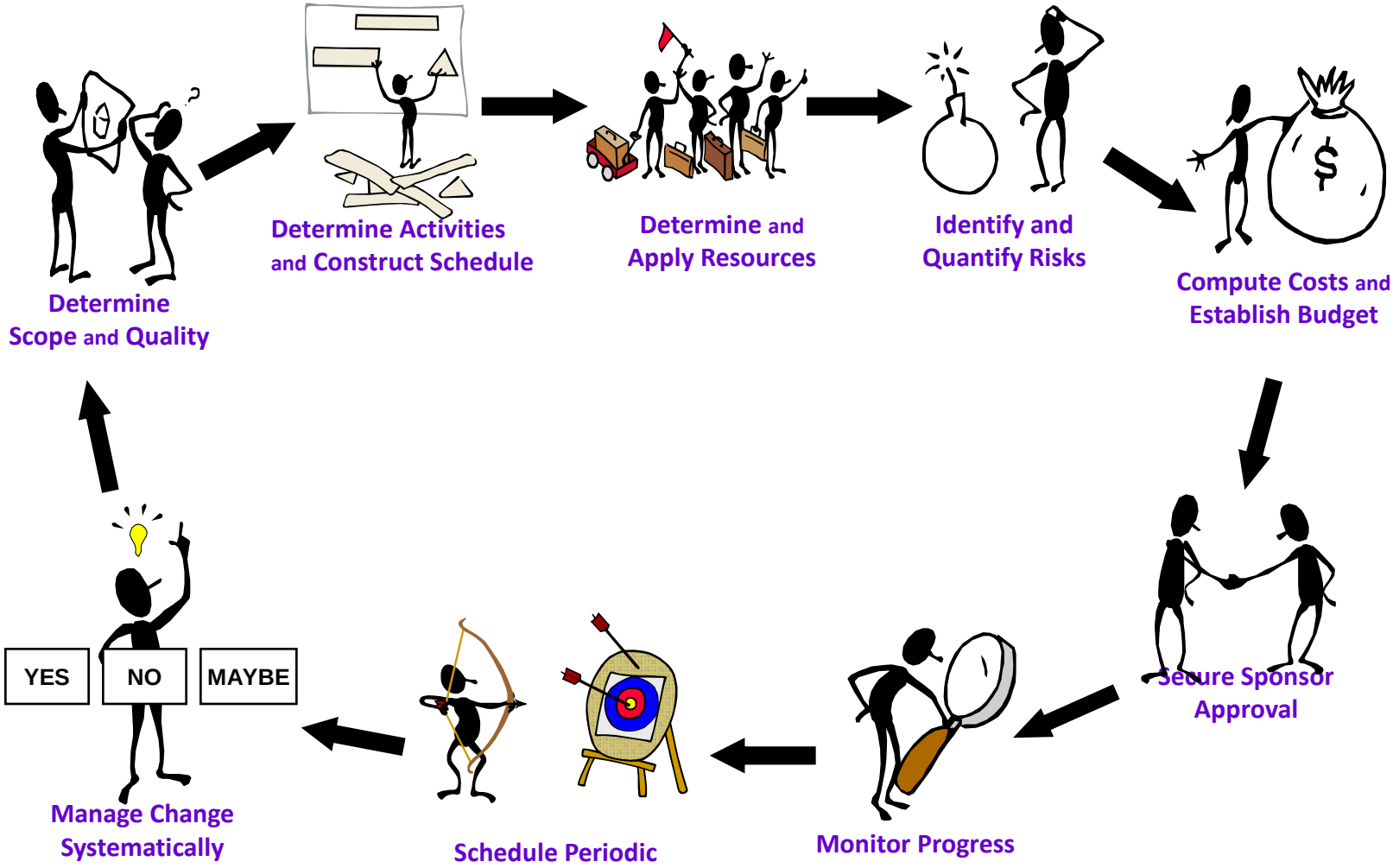


Initiate	Plan	Execute	Monitor & Control	Close
Validate Business Need	Collect Requirements	Direct Project Work	Monitor & Control Project Work	Wind-down Project Activities
Determine Feasibility	Create Work Breakdown	Fulfill Customer Requirements	Monitor & Control Scope	Finalize Delivery
Define Scope	Create Project Mgmt. Plan	Procure Goods and Services	Keep Abreast "Project Pulse"	Validate Customer Acceptance
Define Vision & Mission	Define Roles & Responsibilities	Perform Quality Assurance	Perform Change Control	Summarize Project Achievements
Develop Project Charter	Establish Schedule	Manage Project Team	Check Schedule Status & Measure Variance	Communicate Lessons Learned
Identify Stakeholders	Establish Budget and Cashflow	Manage Stakeholder Expectations	Check Budget Status & Measure Variance	Settle Final Budget Numbers
Identify Team	Develop Communication Plan	Communicate Progress, Risks	Perform Quality Control	Disband Project Team
Estimate Resources	Develop Risk Management Plan	Escalate Issues with Sponsor	Report Project Performance	Archive Project Artifacts
	Conduct Project Kick-off	Proactively Drive Solutions	Monitor & Control Risks	Recognize and Celebrate Success

"Begin with the End in Mind"

Steven Covey, 7 Habits of Highly Successful People

The Project Odyssey



Project Success Criteria

- Finishing the project **ON TIME**
- Maintaining costs within **BUDGET**
- Achieving **QUALITY** deliverables within **SCOPE**

" TRIPLE CONSTRAINTS "

Project Management Principles

Principle #1

Know Thy Project Management Fundamentals

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Principle #2

Thoroughly Understand the Customer's Requirements

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Principle #3

Build a Strong Team with Defined Responsibilities

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Principle #4

Communicate, Communicate, Communicate

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Principle #5

Identify Risks Regularly and Take Steps to Mitigate

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Principle #6

Manage Stakeholder Expectations

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Principle #7

Write It, Share It, Save It

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Principle #8

Be Relentlessly Proactive

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Principle #9

Be Comfortable with the Uncomfortable

Project Management Principles

Principle #10

Celebrate Success

Final Thoughts

- Put principles into practice
- Maintain discipline
- Plan your work, Work your plan!

Thank You

ricole.johnson@starbucks.com

206-318-5188

Resources

pmi.org Project Management Institute

pugetsoundpmi.org PMI Puget Sound Chapter

iil.com International Institute for Learning

cadencemc.com Cadence Management Co.

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15 Questions

Presented by

Randy Lord

Boeing

747-8i Insulation Blankets Project Manager

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15 Questions

1. **Why are we doing this?**
2. **Customer?**
3. **What does success look like?**
4. **Scope?**
5. **Sponsor?**
6. **Start/End Dates?**
7. **Schedule?**
8. **Budget?**
9. **Plan?**
10. **Deliverables?**
11. **Critical Path?**
12. **Team Members?**
13. **Action Items?**
14. **Top three Risks/Worries (What could go wrong)?**
15. **Mitigation Plans?**

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Panel Presentation on Project Management Principles

Engineering the Project: Team Roles in Managing Projects

Presented by

Scott Tavaglione, PE, P. Eng.

GE Water & Process Technologies

Project Engineer

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Project Engineering

- Definition of Project Engineering Varies by
  - The engineering and project management organization structure
  - The product being produced
  - Level of responsibility and experience

Successful Project Engineering

- Involves creative solutions and problem solving
- Is an endeavor that requires many different technical and interpersonal skill sets.
- Project Engineering is the third major step in the process of assuming more and more responsibility, after Engineer, and Sr. Engineer
- Depending on the organization and its product, the Project Engineer is usually teamed with the Project Manager where the two work as a nucleus or battery for the project technical and commercial success

Successful Project Engineering

- Must be able to communicate and write well, to both internal and external clients
- Must have reasonable knowledgeable of other engineering disciplines' requirements for the product design in order to lead the project development and integration
- Must be able to work with the design team to integrate all the requirements of project

Project Engineering Directives

- Obtain a PE license for the state in which you live
- Exercise due diligence with regard to safety in design
- Establish and review with the team all of the chemicals involved in the project and put together a Chemical Plan
- Always keep the PM informed and up to date on design issues, scope creep, spec issues, etc.

The Chemical Plan

	Clearwell Sulfuric Acid	BC Sulfuric Acid	RO Filter Sulfuric Acid	BC Sodium Hydroxide	Clarifier Sodium Hydroxide	Clarifier Sodium Hypochlorite
Pump Tags	012D911, 012D912 (future spare), 012D913	012D916, 012D917 (spare)	012D914, 012D915 (spare)	012D904, 012D905 (future), 012D903	012D901, 012D902 (future), 012D903	012D961, 012D962 (future), 012D963
Compound/ Additive	93% Sulfuric Acid			50% Sodium Hydroxide		12.5% Sodium Hypochlorite
Grade	Technical Grade			Technical Grade		Technical Grade
Additional Dilution Required ?	no	no	no	no	no	no
Flow Rate (per Pump) from PFD	3.60 gph	3.60 gph	1.08 gph	minimal	38.40 gph	0.60 gph
Delivery Frequency						
Chemical Supplier						
Expected Usage Rate	110.3 lb/hr	55.2 lb/hr	16.5 lb/hr	minimal	979.3 lb/hr	12.0 lb/hr
Expected usage during startup	N/A	N/A	N/A	N/A	N/A	N/A
Expected 1 yr usage	966,300 lbs	483,150 lbs	144,945 lbs	minimal	8,579,043 lbs	105,204 lbs
Expected 1 Month Storage Supply	N/A			N/A		N/A
Refill Totes Required for 1 Month Storage[1]	N/A			N/A		N/A
CIP Chemical Quantity for cleaning 4 RO trains[2]	N/A			N/A		N/A
CIP Chemical Drum 3 Month Storage	N/A			N/A		N/A
Price						
Notes	common storage tank			common storage tank		common storage tank
Storage (Tank or Tote)	6,500 gallon storage tank			36,000 gallon storage tank		10, 000 gallon storage tank
Storage (Tank or Tote) Material	coated carbon steel			coated carbon steel		HDPE
Expected Delivery Method	tanker truck			tanker truck		tanker truck

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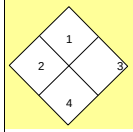
The Chemical Plan

Acceptable Piping Material	Alloy 20	316 SS, PVC, CPVC, Carbon Steel	PVC, CPVC
Acceptable Gasket Material			
Spill Containment	concrete structure	concrete structure	concrete structure
Chemical Description	93% sulfuric acid	50% sodium hydroxide	12.5% sodium hypochlorite
Chemical pH	< 1.0	13-14	12.25 - 13.0
Spec Gravity	1.837	1.529	1.2
Active Ingredient(s)	sulfuric acid	sodium hydroxide	sodium hypochlorite
Chemical Classification	corrosive, strong mineral acid	corrosive	corrosive, strong oxidizer
Potential for degas at design temp 120 °F	no	no	yes
Incompatibility	water reactive, strong alkalies, chemically reactive metals (Cu, Al, Zn, Mg - explosive H2 gas released)	strong acids, chemically reactive metals (Cu, Al, Zn, Mg -exploseive H2 gas released).	strong mineral acids, ammonia, reducing agents, excessive heat.
Separation			
Flammable	no	no	no
Haz Mat ID Marker 			
1 - Fire Hazard 2 - Health Hazard 3 - Reactivity 4 - Specific Hazard	0 3 2 W	0 3 1 COR	0 3 1 COR
Chemical Name	Sulfuric Acid	Sodium Hydroxide	Sodium Hypochlorite
Concentration	93%	50%	12.50%
Chem Formula	H_2SO_4	NaOH	NaOCl

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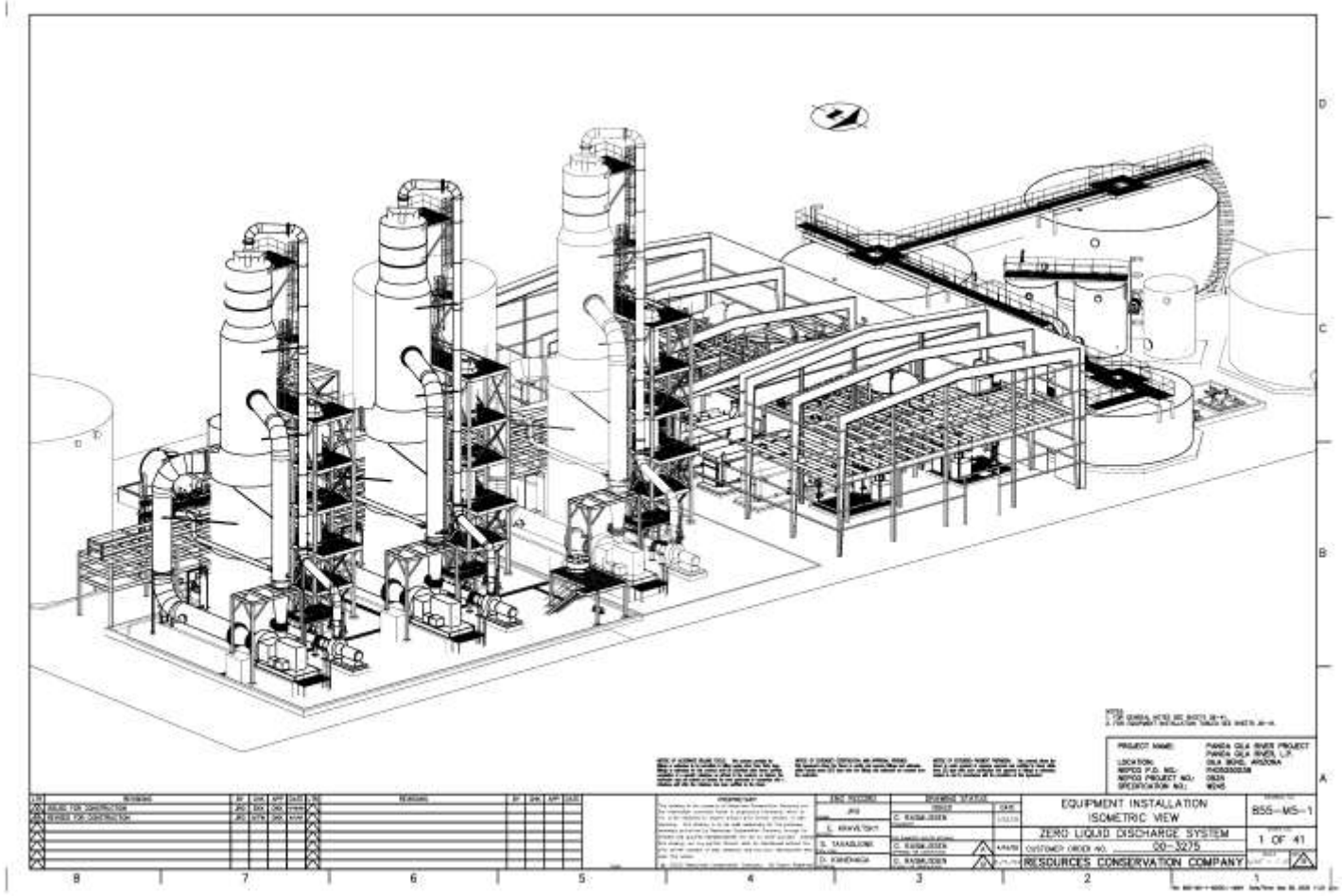
Chemical Plan Elements

- Columnar Layout for each chemical
- List all chemical physical properties to ensure metering pump systems are correctly sized
- List acceptable materials of construction for piping and gaskets
- List the chemical incompatibilities from the MSDS including other chemicals, metals, etc.
- Complete the hazard communication diamond and the PPE required
- Perform a fire code review for separation, and determine the less than exempt amounts of chemical for the occupancy rating

RCC – ZLD Plant Project



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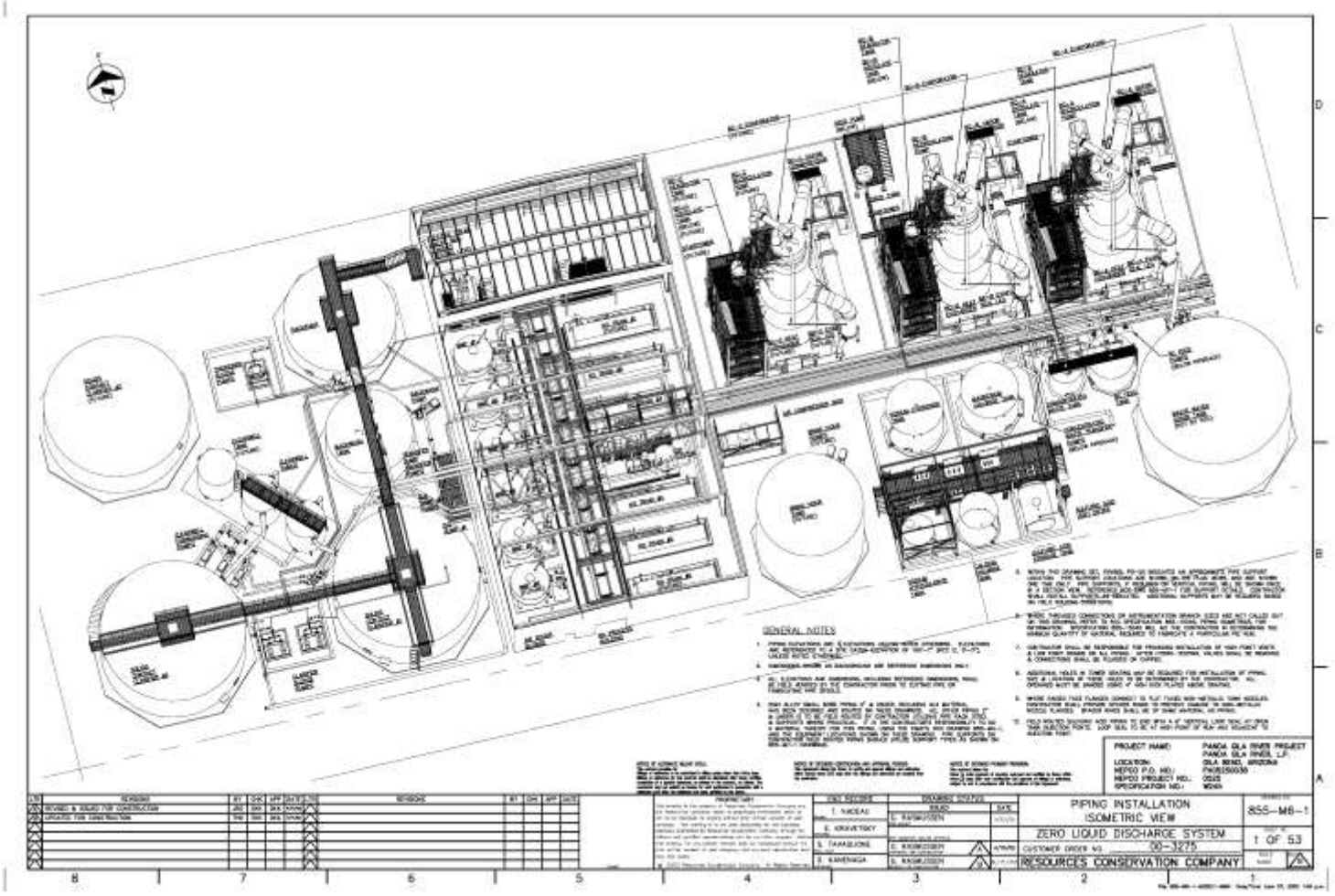
ZLD Plant Project



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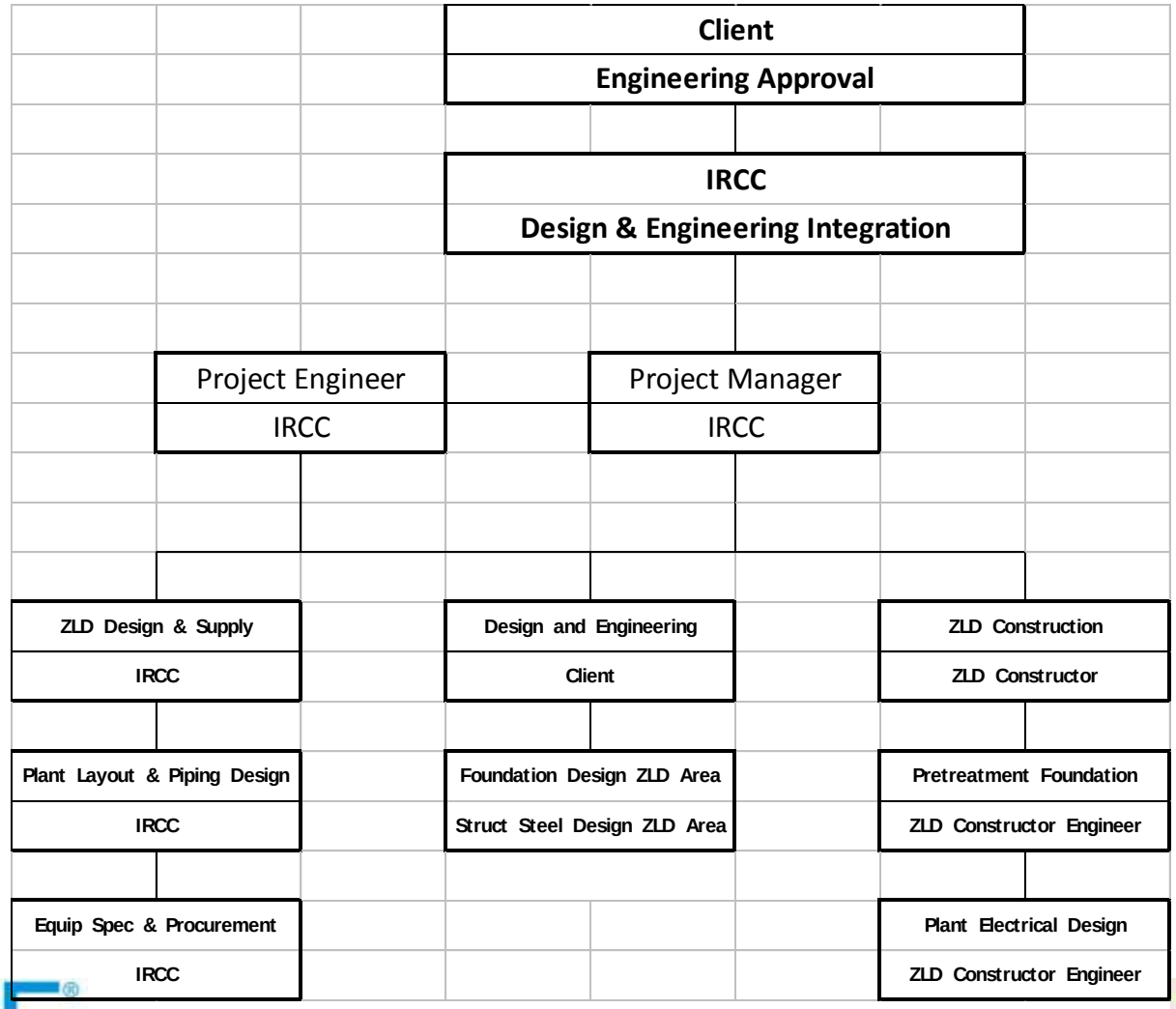
ZLD Project Objectives

- Meet the ZLD Schedule for Plant Design and Equipment Delivery to Support Power Plant and ZLD Construction Schedules
- Provide Design Coordination between (3) Design Groups – Client, IRCC, and ZLD Constructor & Engineer

ZLD Team Organization



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ZLD Project Milestone

- Design Kickoff with Client Aug ’01
- Design Layout and Equipment Spec’s Aug ’01 to Nov ’01
- All Major Equipment on Order, Dec ’01
- ZLD Construction Contract Awarded, Dec ‘01
- Initial issue of ZLD Installation Drawings for Construction, April ’02
- Final issue Construction Drawings, June ’02
- Equipment Deliveries Completed, Aug ’02
- Construction Completed, Mar ’03
- Commissioning Completed, Sept ‘03

ZLD Pretreatment Equipment

- Solids Contact Clarifiers
- Thickener
- Underflow Pump Skids
- MMF Backwash Tank
- MMFs, Cartridge Filters
- RO Skids
- CIP Skid
- Chemical Addition Skids

ZLD Process Equipment

- Evaporators
- Vapor and Recirculation Ducts
- Vessels and Process Tanks
- Vapor Compressors
- Centrifugal Pumps
- Bulk Chemical Storage Tanks
- Chem Addition Skids

ZLD - Construction

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ZLD – Pretreatment Area

ZLD – Evaporator Sump Fabrication

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ZLD – Condenser Fly-in

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ZLD – MMF Delivery

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ZLD – ROs

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ZLD – Process Building Piping

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ZLD – Evaporator Stair Towers

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ZLD – Vapor Compressor w/Insulation

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ZLD – Vapor Compressor Installation

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ZLD – Process Building

ZLD – MMF/RO Chemical Addition

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ZLD – MMF Units

ZLD – RO Sets

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ZLD – Chemical Area

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ZLD – Chemical Addition Platform

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Project Engineering Summary

- Always keep the PM up to date with the latest design and project engineering developments
- Coordinate the efforts of all disiplines involved including project staff engineers
- Coordinate the schedule of tasks that support design development and deliverables
- Perform due diligence for safety in design every day

Project Management for the Engineer

Kalan Guiley
Guidance, Control and Navigation Engineer
747-8 High Lift Systems, The Boeing Company

October 20, 2010

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Background

- Education
  - Honors Baccalaureate of Science in ME, Oregon State University
  - Masters Certificate, Applied Project Management, Villanova University
  - MBA, Technology Management, UW
- Work Experience
  - Fluid Systems Standards, Mechanical Hydraulic Systems, The Boeing Company
  - Flight Controls - High Lift Systems, The Boeing Company
- Professional Society Involvement
  - ASME
  - Puget Sound Engineering Council

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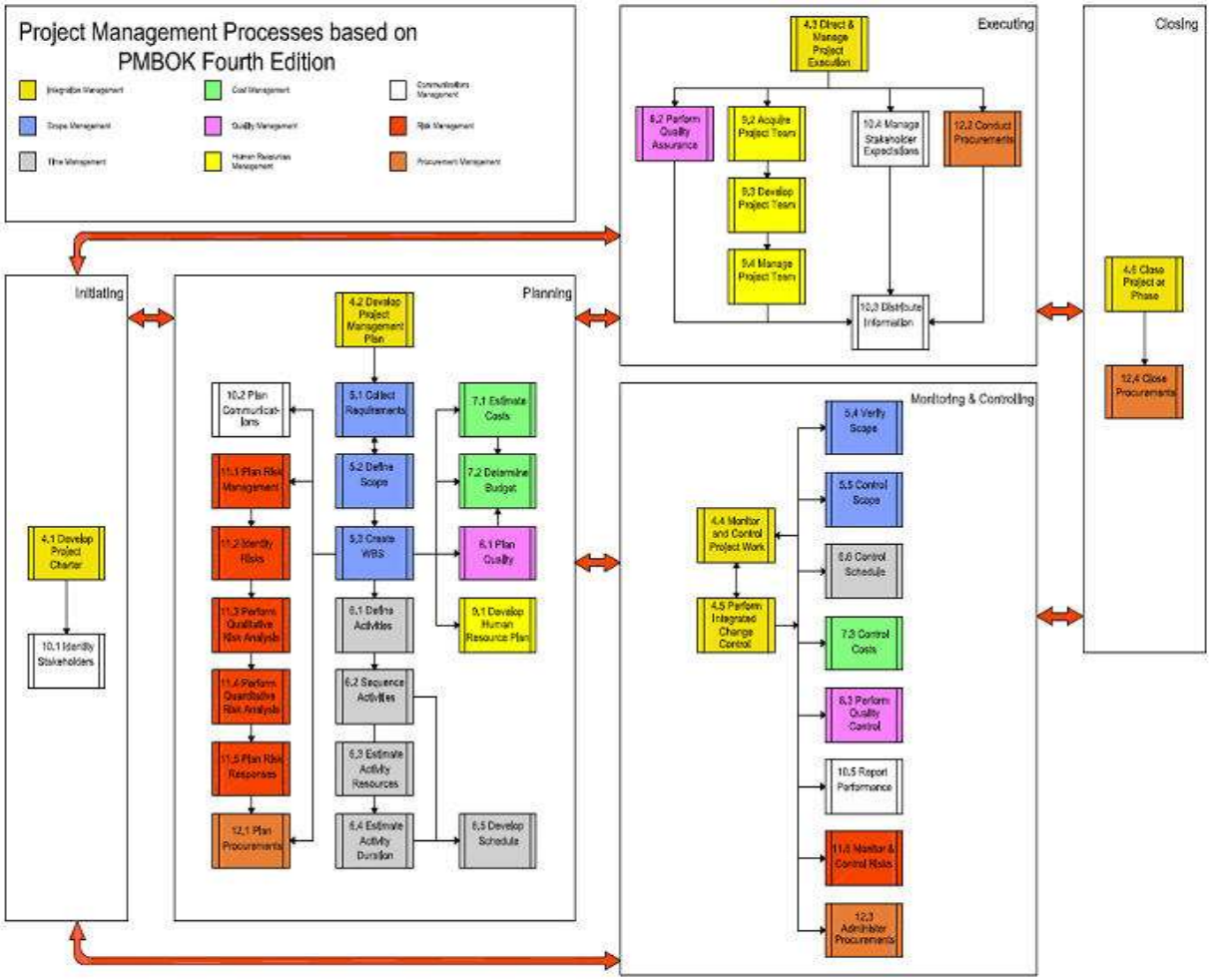
Is This a Project?

- *Per PMI, a project is:*
  - *a temporary endeavor, having a defined beginning and end,*
  - *undertaken to meet unique goals and objectives,*
  - *usually to bring about beneficial change or added value.*

Almost everything you do is a project!

Project Management Processes



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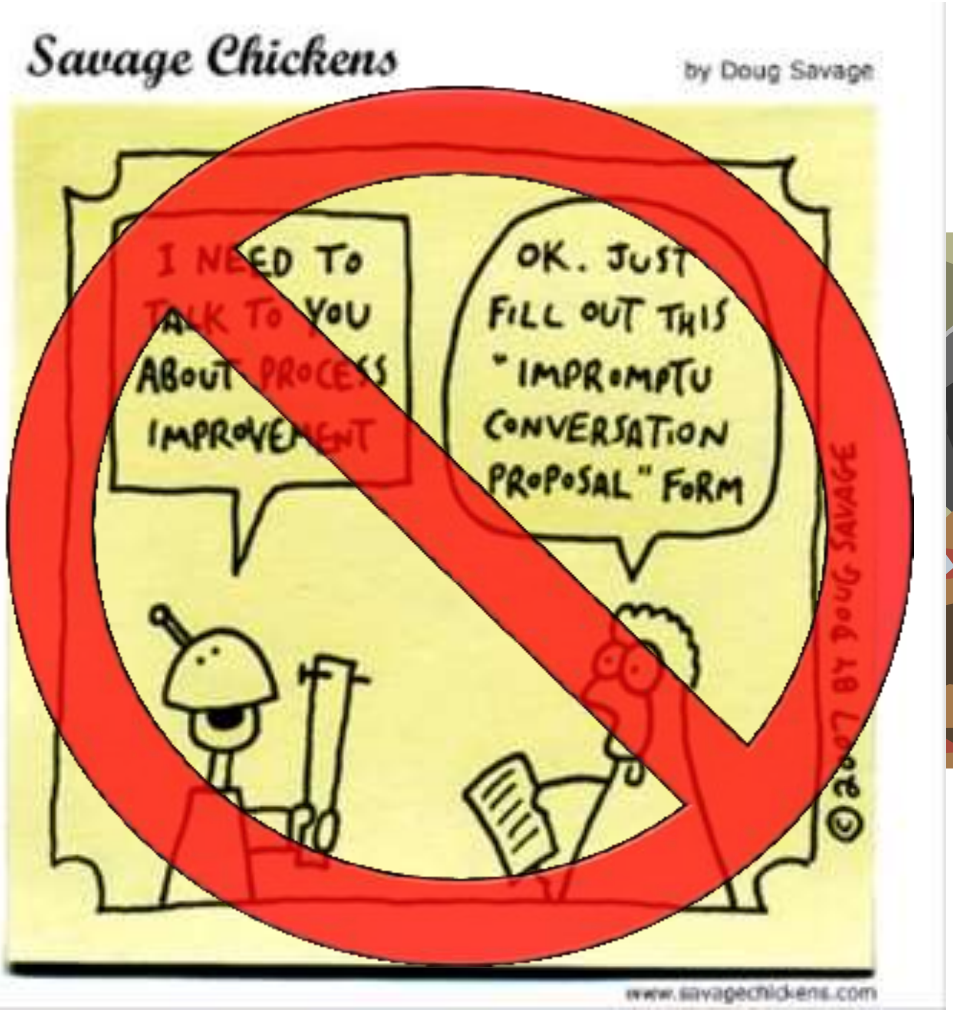
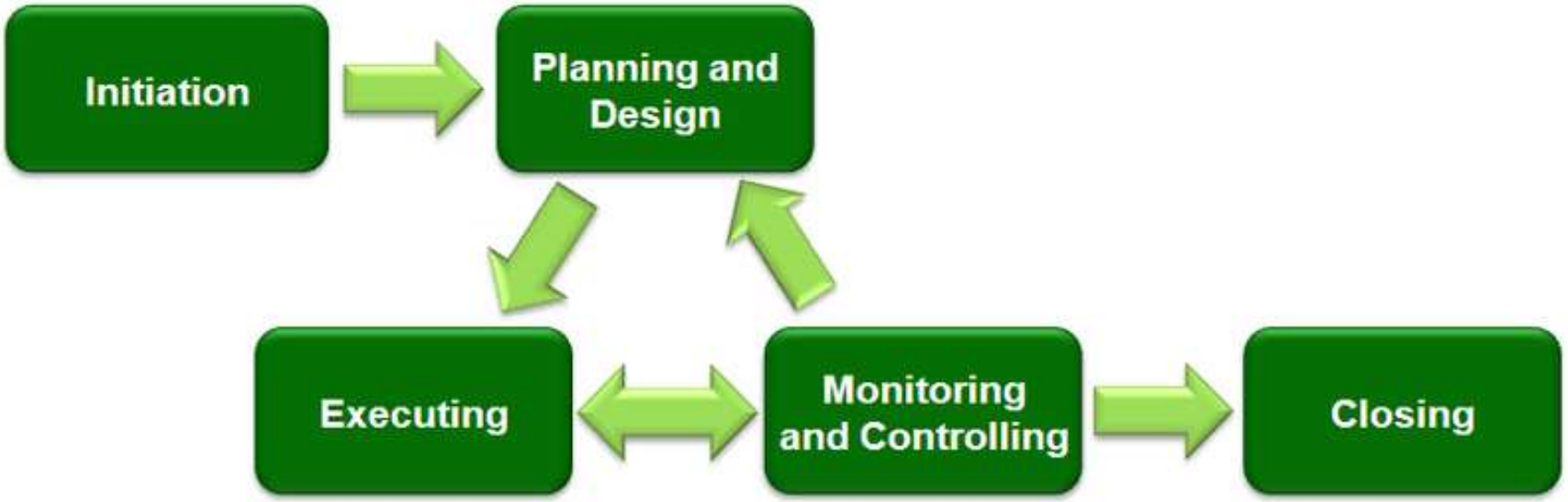
When Is a "Project" Really a Project?

- My rule
  - 3 or r
  - 3 or r
  - 3 or r



Project Phases



Keys to Success

- Planning
  - Take the time to understand the project scope
  - Get the schedule right
  - Do you have the right team?
- Team Dynamics
  - Skills AND personalities
  - Inquiry vs. advocacy
  - Process fairness (Brockner, HBR reprint R0603H)
- COMMUNICATION!

Opportunities

- Professional Societies
  - Planning programs and events (projects!)
  - Teamwork
  - Leadership experience
  - Contribute to the profession
  - Fun
  - Visit http://pseconline.org/Societies/ to explore local options

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