

11/30 Code of Ethics

Tuesday, December 04, 2012

11:06 PM

Objective

Complete and Post to EDGE by 12/14/12

Progress

50% completed with team

Next Steps

Shawn - combine schedules

Lauren - Send out working doc of progress so far by 12/7

All - Submit responses to open items by 12/12

11/30 D-R Trip Needs

Tuesday, December 04, 2012

11:09 PM

Objective

Brainstorm what data and information we need from D-R to start working on our project

Results

IE-

Product Family

Variation

BOM

Part sizes, weights

Tools, equipment needed

Demand

of operators

Available time/day

Union restriction on work content

Footprint of proposed area

Process sequence and time flow

Bottleneck - inventories, delays

Parts replenishment

Supplier frequency

Sub-assy frequency

Threshold for ROI of project

ME-

Fabrication methods used

Materials

Assembly order

Material handling equipment currently used

Power/air requirements

Orientation of assembly at each phase of process

Next Step

Form into questions for Henry for Friday 12/7 visit, email communication of data/info

Week 2 Guide Meeting

Wednesday, December 05, 2012

3:59 PM

Agenda:

1. D-R Trip Organization

- a. Logistics
 - i. 1 hr 45 min trip, exit 44
 - ii. Meet at 7AM in Brinkman Lobby, Leave at 7:15AM
 - iii. Business Casual w/ Steel toes
- b. Operational Questions to Ask
 - i. Teleconference # for future meetings
 - ii. Chain of Command for contacts/specific info
 - iii. Consultant interaction with our team
- c. Info Needs
 - i. Prints of footprint for cell location - constraints to area
 - ii. Product family, amount of variation
 - iii. Bill of Material -qty, part size, weight
 - iv. Budget considerations? - ROI threshold?
 - v. Unionized workforce- any adverse effects to be mindful of?
 - vi. Sub-assembly expectations, interaction with final assembly
 - vii. Process documentation - sequence, time, orientation of part(s)/assembly needed
 - viii. Fabrication methods, tools, equipment needed
 - ix. # of operators, available time/day
 - x. Overall lead time for the whole scale of compressors
 - xi. Where are the sources of delay (Bottleneck)?

2. Guide-Team Interaction

- a. Weekly Meeting Set-up
 - i. Set for Thursdays at 9AM
 - ii. Confirmed by John 12/5
- b. Expectations for IE's
 - i. Value Stream Map
 - ii. Process Documentation
 - iii. Operational Issues
- c. Engineering Notebook Expectations
 - i. John will check every couple weeks to see what each team member has done
 - ii. Take all notes and log time into one notebook

3. Future Steps of MSD

- i. Finalized scope will feed project schedule, work breakdown
- ii. Turn finalized needs into specifications
- iii. Finalized functions will feed concept development

4. Roles and Responsibilities

- i. EDGE data management - everyone edit or just 1 person? (can be tedious, time-consuming)

12/7 D-R Trip Notes

Sunday, December 09, 2012
8:59 PM

Dresser-Rand, Painted Post Operations:

Reciprocating Compressor Assy

Product Family: Separable, Gas Field Application - CVIP, MOS (45%), HOS, HOSS

5% of market overall - more customized than standardized previous to now, trying to standardize in the new MOS product family

Most customized part of system is tubing/lubrication system

Lead time typically 4 to 16 weeks

Frame with crankshaft + cylinders

Frame - sand casting lead time is typically 6 weeks

Shipped from facility by truck - modular

Operations

1 shift operation

Volume projected to be 200/year

Current layout in Shop 22:

Fixed position with 2-man teams that rotate to idle frames when part shortages occur or urgency to meet deadline

Pneumatic power preferred

Projected process layout (consultants) in Shop 6:

5 stations + 2 test stations + paint/touch-up + staging

Cylinder sub-assy offline

Cylinders need to be rotated longitudinally
(Frames are not, only laterally)

1 person/sub-assy station

2 people/ station

Need a lift (jib-crane, hydraulic lift, etc) to seat crankshaft into frame

Challenges/Constraints:

- Packaged weight distribution - mismatched cylinders attached to frame

1 frame at each of the 5 stations

Takt time = 1 shift (effective 7.5 hours)

Test:

Currently takes 2 days between set-up, fill, test, troubleshoot (81% first pass yield for year), drain, tear-down

Workforce:

30+ years experience plus some apprentice-type hires

Willing to expand to accommodate proposed flow layout

Specs:

95% on-time delivery

26% margin

Projected 200 units/year

Needs:

Safe + ergonomic ->comfort level is frame sits 18-24" from bottom of frame

Effective and efficient

Flexible - no monuments

Cost effective

Continuously improving

Make problems visible

Mixed model line

Project Scope:

Move compressor in the assembly area

No overhead cranes - fatality in last year from an overhead crane

Move compressor onto truck from staging area

Confidentiality:

Anything on website is free reign, NO volumes or costs

Reporting:

Weekly through teleconference for first 2 months

Possibly bi-weekly after we get going

Come on-site based on task on Fridays, once/month

Next Steps:

1. Henry to send us all the data shared during the trip - received 12/9 and forwarded to team
2. With team - review notes and data/info shared
3. Project description, customer needs, specifications, functional decomposition, concept ideas
4. Review this list with Henry ASAP - Find teleconference information, if available, from John - email sent 12/9

12/10 Team Meeting

Thursday, December 13, 2012
12:29 AM

Agenda

Goal:

Review D-R trip notes and request any additional information, start progressing rapidly towards concept selection and prepare for systems design review in week 5

Accomplished:

1. Henry send us all the data shared during the trip - received 12/9 and forwarded to team
Reviewed and came up with list of requests:
 - Process documentation at each of the 5 steps to understand frame loading as parts are added, with particular interest in the lightest and heaviest cylinders that would be mounted
 - CAD models of assembly to find center of gravity
 - Predicted layout for new shop floor - any constraints on size or shape of this material handling system? Size of different stations to give us an idea of what type of space we have to work with and where it is located within the layout.
2. Project description
 - Painted Post operations would like to transform their fixed material position assembly process for their gas application reciprocating compressors into a flowing cell layout. Their motivations are to prepare for a projected increase in demand for their newly released MOS compressor, while at the same time increasing their on-time delivery rating. A consultant has created a conceptual design of the process flow through this cell. The team's task is to create the material handling system that will allow the assembly to travel through this cell.
 - PUT THIS INTO EDGE
 - Challenges
 - Weight distribution once cylinders as they are mounted and after
3. To-do:
 - 1. Team: Research concept ideas for benchmarking, brainstorming, 2 per person, with pros and cons
 - 2. Individual: Find time to meet with Henry next Monday to review progress - teleconference setup
 - 3. Individual: Put project description in EDGE
 - 4. Individual: Put finalized Code of Ethics in EDGE
 - 5. Individual: Draft work schedule for team

Future TTD

1. Customer Needs draft
2. Specifications draft
3. HOQ draft
4. Functional Decomposition draft
5. Concept Selection
6. Systems Design Review - schedule, prepare

12/13 Guide Meeting

Thursday, December 13, 2012
4:40 PM

1. Summary of D-R Trip:

- a. Current process
 - i. 4 frames currently in process
 - ii. 2 cylinders in process
 - iii. A lot of idle parts inventory and WIP
 - iv. Drain oil by propping at an angle with wood
- b. Proposed process
 - i. Consultant is creating flow and process layout
 - ii. Our job is strictly to deal with the material handling of the frame through the cell
 - iii. Abundance of air supply - use as power for our system?
- c. Customer Needs (first stab)

No.	Description	Note
1	The system takes into account user safety and ergonomics.	
2	The system does not create permanent monuments or otherwise creates an inflexible set-up.	Possible constraint?
3	A " sick" bay is needed to remove problematic assemblies off the line.	
4	The system incorporates how the compressor will be placed and mounted onto a truck bed.	

- d. Challenges
 - i. Carrier supports weight that is not centered over midline - when cylinders are mounted

2. Next steps for team:

- a. BENCHMARKING, RESEARCH suggestions
 - i. Gorbel, Gleason in town - go and see what they have to move heavy things
 - ii. Go to co-op office and find co-ops that worked at Lockheed, UTC, Boeing where they move heavy things everyday
- b. Further customer needs definition
- c. Specification definition - need feedback from Henry
 - i. How much time do we have to move the compressor between stations? - avoid this process becoming the bottleneck
 - ii. Will they be moved simultaneously (takt = 1 shift) or one at a time?
- d. Functional Decomposition (first stab)

Inputs: Frame Carrier System Energy - self-propelled or system?	Initiate move -> sustain move -> stop move Recognize CofG (monitor balance), ensure proper positioning, monitor safety	Output: Frame on truck
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3. Operations Discussion

- a. John is okay if our systems design review is Week 6
- b. Design review will be at RIT and at D-R
- c. John is willing to go to D-R with us in the next 3 weeks (weeks 4, 5, 6)
- d. Found out if Henry will be in the office next Friday for a potential visit

Actions Needed:

- 1. Find out if and when we are meeting with Henry via teleconference early next week to review:
 - a. Customer needs
 - b. Specifications

c. Functional decomposition

d. Concept ideas

e. Data requests

- 2. Figure out if we are going to D-R next Friday of week 4 - is there a need to?
- 3. Benchmark past Process Innovation projects to understand their project schedule, etc

12/14 Team Meeting

Sunday, December 16, 2012
8:11 PM

Objective

Work Breakdown Structure
Customer Needs
Functional Decomposition
Pugh Matrix for "Moving" Technologies
Next Team Meeting - when & agenda
Next D-R visit/meeting

Work Breakdown Structure

Individually, we wrote down what they believed needed to get done on post-it notes
We grouped everyone's responses into affinities
I will translate this into Microsoft Project for the team and post to EDGE

Customer Needs

Title	Priority Multiplier	Description
Safety & Ergonomics	3	Capacity to prevent work-related injury
Cost	1	Upfront Purchase/Installation Cost (Capital)
Transportability	2	Ease of motion
Current Capability	1	Compatibility with current facilities
Scale	3	Impact of installation
Guidance	2	Ability to remain inline
Flexibility	3	Capacity for systems integration
Maintenance	2	Operational Cost, Frequency of repairs, Repair Cost
Returnability	2	Ability to return empty fixture to beginning of line

Functional Decomposition

(Thanks to Nick for putting it into Visio)
Posted to EDGE

Pugh Matrix for "Moving"

	Safety	Cost	Transportability	Current Capability	Scale	Guidance	Flexibility	Maintenance	Returnability	Feasibility Score
Multiplier	3	1	2	1	3	2	3	2	2	
Fluid Skid	-2	-3	3	-3	-3	3	-3	0	-3	-24
Air Skid	-1	0	3	2	3	-3	3	0	2	21
Conveyors	2	-2	3	-2	-1	3	-2	-3	3	5
Carts	2	3	-1	3	3	-2	3	3	2	34
Rail System	3	0	2	-1	-2	3	1	3	-3	15
Crane	-3	-3	3	-3	-2	2	3	0	3	4
Mag Lev	-2	-3	3	-2	-2	3	1	-3	-3	-14

Rankings For Multiplier	
1	It would be nice
2	Should be incorporated
3	Must have, absolutely necessary

Next Team Meeting

Monday 12/17 @ 9AM in MSD studio

Agenda:

- Pugh Matrices for Propulsion and Shipping
- Update EDGE
- Next meeting on Wednesday - prepare for Thursday guide meeting

Next Steps for Me

- Update EDGE - functional decomposition
- Put notebook on EDGE for team to reference
- Find out if Henry is available for us to visit on Friday 12/21:
 - Customer Needs, Priority
 - Functional Decomposition
 - Specifications definition - how are we going to measure how successful we are at meeting the customer needs?
 - Concept Selection for (3) main functions

Next Step for the team

- Find 2 technologies for each Propulsion and Shipping for Monday 12/17

12/17 Team Meeting

Tuesday, December 18, 2012
3:30 PM

Objectives

- 1) Concept Selection Matrix for
 - a. Propulsion
 - b. Loading (for shipping)



[GET FROM COLE]

- 2) Next Meeting Set-up - Wednesday 12/19 @ 6PM
(Shawn can't make it due to an exam)
Agenda -
 - a. Prep Agenda for Guide meeting on Thursday - status report, questions, goals
 - b. Prep for Trip on Friday - presentation, goals

12/19 Team Meeting

Wednesday, December 19, 2012
6:04 PM



Meeting w...

(Shawn, Alex, Cole absent)

Objective



Prep Agenda for Guide meeting on Thursday - status report, questions, goals



D-R Senior...

Status Report from past week:

- Customer Needs Definition
- Functional Decomposition
- Concept selection for 3 main functions - integration of multiple technologies
- WBS Draft

Goals for Weeks 5 & 6:

- D-R Approval for customer needs, functional decomposition, WBS
- Specifications definition from D-R
- Concept Selection based on feedback from D-R - integration
- Quotes from different companies for solutions?
- Risk Management
- Schedule SDP in Week 6 (both at RIT and D-R)
- Create SDP PowerPoint

Questions:

- Review WBS for feedback
- What do you expect for risk management?
- What does John expect for systems design review?
 - PRP review in our words
 - Customer Needs
 - Specifications - HOQ
 - Functional Decomposition
 - Concept Selection - DEPTH?
 - Systems Architecture?
 - Risk Management



Prep for Trip on Friday - presentation, goals:

Use same template as John's but update/add:

- Agenda
- Data requests
- Specific questions
- Requests for feedback

Team - Things to Do:



- Submit any feedback for Friday D-R presentation
- Someone? compile and formalize presentation and send out to group
- Lauren will send it to Henry Thursday night by 8PM

Lauren - Things to Do:

- Check room 9-2119 for a telephone on 12/20
- Print out presentation and WBS for guide meeting
- Print out updated individual notebook for guide meeting
- Send out email to team for Friday 9:15AM to set up, discuss who's going to lead, speak when, etc

12/20 Week 4 Guide Meeting

Wednesday, December 19, 2012

11:48 PM



Meeting w...

Agenda:

★ Past week activities

1. Customer Needs:

- Combine and reword Title and Description columns
- Transportability - include start, sustain movement, stop

2. Functional Decomposition:

- Define current "open" design - compressor attaches to a fixture and a carrier/cart carries that fixture down the line
- Sick bay re-entry to line function steps
- Connect a group of functions on this diagram with the 3 main functions of movement (X-Y direction), propulsion (overcome inertia), loading (shipping)
 - i.e. Propulsion - initiative movement, sustain movement, stop movement

3. Concept Selection:

- Create a morphological chart to narrow down the # of integrated systems - some are not compatible with each other

★ Goals for weeks 5 & 6

1. Specifications - give D-R an idea of what we're expecting in order to measure how well we meet the customer needs

i.e. time - to move minimum & maximum, quality, safety, effort - # of people?, weight of fixture

John -

"I looked at 3 previous projects on Edge – 09457, 10457, and 10459. I encourage you to do the same. Each will give you an idea or 2 for a possible spec. Again, the best way to handle the spec definition is for you to propose them, even if the numbers aren't known yet, and then collaborate with the client to fill in the blanks.

Possibilities that I see based on past projects

- Minimize travel distance, although that has more to do with cell layout than cart design
- Maintain (or reduce to) a lost time injury rate of zero in the cell due to moving material
- Minimize impact of cart on total cell reliability (if the cart breaks and needs repair, you don't want the whole cell to be down for an extended period)
- Enable "quick" and safe travel (spec in ft/minute)
- Stopping distance (feet? Seconds?)
- Minimize part defects caused by material handling (Yield %, or scrap %, or \$)
- Economic payback (you'll need to hit their hurdle rate and payback period)
- Minimize changeover time between different models of compressors (minutes)

I can think of others, but you get the idea. Take a look at those 3 web sites."

- Review EDGE projects 09457, 10457, 10459 for specification definition ideas

2. Quotes from companies *after* the SDR

★ Questions and requests for you

1. SDR - do dry run with John + ME faculty? (Gomes, Wellin, Landschoot) on Thursday of week 6, D-R presentation on Friday of week 6
2. Content of SDR = 35-40 minutes, 45 minutes for discussion - see slides from workshop during Week 3
 - Background, motivations, scope
 - Customer needs
 - Specs
 - Functional decomposition
 - System architecture
 - Risk management - rate occurrence, severity for project risks (data, conflict within team, lack of expertise), technical risk (test fails, no Plan B)
 - Project Plan

John can go to D-R with us during Weeks 6, 7, 8 - SDR

John will review the functional decomposition and WBS



Lauren - schedule meeting during Week 5 for WBS

12/21 Team Meeting

Friday, December 21, 2012

11:17 AM

Review of D-R Week 4 Status Report

- Follow-up email to Henry - Lauren by end of day
 - Sick bay - how/when it re-enters line
 - Video for "wheels"
 - Requests to follow up on
 - Cylinder weights - worst case cylinder

To-Do:

- ★ Next Meeting: Wednesday 1/9 6:30-8:30
- Send out to-do email to team - Lauren
- Post meeting notes to EDGE - Lauren
- Update customer needs - Nick over break
 - Feedback from meeting
 - Speed from propulsion - add to list
- Functional Decomposition - wait until D-R feedback
 - Color key for moving/propulsion & lifting
 - Eliminate shipping
- Specifications concept table - Alex over break
 - John's project ideas - Review EDGE projects 09457, 10457, 10459 - their specifications table and House of Quality - for specification definition ideas
 - Create list of specifications, expected values, and connection to customer needs
- Concept Selection Matrix - Shawn, Lauren
 - Research technologies from feedback in meeting notes
 - Pneumatic + hydraulic combined units for lifting function
 - Update/recalculate scoring based on change in customer needs - will change rankings
 - Change "Cost" multiplier from 1 to 2
 - Add new column and rankings for each technology for new customer need of "Usability: Minimize worker frustration while using system, multiplier = 3"
 - Will review during Week 5 as a team
- AutoCAD - Jordon over break
 - Start CAD drawings for cylinder blocks and frame
 - CAD drawing of available space
- Morphological Matrix for Systems Integration - Week 5 as team
- Risk Management - Week 5 as team

1/9 Team Meeting

Wednesday, January 09, 2013
8:24 PM

Attendees: Jordon, Alex, Cole, Lauren

Status since 12/21:

- AutoCAD - Jordon
 - Started CAD drawings for cylinder blocks and frame
- Specifications concept table - Alex
 - Posted on EDGE
 - Need concept selection to be able to select values for empty specs
- Center of gravity calculations for 4 throw - Cole

To do for Friday 1/11/13:

- ★ Next guide meeting - Thursday 1/10/13 @ 9AM
- ★ Next team meeting - Friday 1/11/13 @ 9AM - 1PM(?)
- FROM OVER BREAK - Update customer needs - Nick
 - Change " Cost" multiplier from 1 to 2
 - Add new column and rankings for each technology for new customer need of "Ease of Use: Minimize worker frustration while using system, multiplier = 3"
 - Speed from propulsion - add to list
- Cole to scan CG calculations, send to Alex through email, to post to EDGE by 1/11
- Cole to draft email of questions for Henry, send to Lauren through email, forward to Henry by 1/11
 - 2 & 6 throw weights and dimensions
 - 5,7 throw existence/configuration
 - How long does it take to level the frame?
- Functional Decomposition - wait until D-R feedback
 - Color key for moving/propulsion & lifting
 - Eliminate shipping
 - Doesn't include any steps concerning weight distribution for cylinder hanging (Step 6). From a fixture standpoint, step 6 may require some more detail. Stations 1-4 are the same setup, but station 5 involves cylinder attach
- Research technologies from feedback in meeting notes
 - Pneumatic + hydraulic combined units for lifting function
 - Locking casters
 - Dimensions of an air skid
- Specifications completion - send to Henry for review?
- Concept Selection down to 2-3 designs with focus on translation
 - Adapt design to accommodate loading for shipping

- ☐ Systems Architecture - interfaces between different functional subsystems
- ☐ Risk Management
- ☐ SDR Presentation slides - draft started on EDGE under " public/ Working Documents/Systems Design Review"
- ☐ SDR Admin set-up - Lauren
 - D-R location - Friday 1/18 - confirm with Henry and John
 - RIT location - Thursday 1/17? - confirm with John

1/11 Teleconference

Friday, January 11, 2013
10:18 AM

Q&A:

Cole:

- 2 & 6 throw weights and dimensions - max & min
Henry to send us spreadsheet
- Infinite cylinder configs?
Henry to look into more worst case scenarios
- 5, 7 throw configuration?
Odd working cylinders
1 dead cylinder as a mechanical weight
- Air pressure, flow
Pressure okay @ 100 psi
Flow okay @ 25 cubic feet / minute
- Loading onto truck - how important is the focus right now?
Henry looking into crane solutions and costs- need new structure independent of buildings
MSD team to focus on movement down line and do detailed design to adapt a solution for loading to decided design approach later

Jordon:

- Dolly video - who makes it?
Designed and built specific for D-R - local tool shops
Will find more details
- Initial position of frame - how to get on system
Position off side of line with a lift, not a concern to load onto "Cart"

Lauren:

Friday 1/18 - professors @ RIT - call in to hear feedback or travel to RIT
Monday 1/21 or Tuesday 1/22 - availability for small group to travel down for presentation
Henry to let us know if he will be traveling or calling in Friday 1/18
Henry to give us a best day/time for 1/21 or 1/22

Alex:

- # of people
currently 2 total (rotate between different orders)
Future = 2/station, total 13-14 people

News: Possible Volume Increase

VX - liquid natural gas maker -> over the road truck fleets, install at trucking terminal, Wal-Mart, increase 4 throw MOS

Future Questions:

- How are we fabricating this for prototype? How do we do tests other than simulations?
- If we need to purchase anything, do we go through RIT or through D-R?

1/11 Team Meeting

Friday, January 11, 2013

10:19 AM

Things to do:

- FROM OVER BREAK - Update customer needs - Nick
 - Change " Cost" multiplier from 1 to 2
 - Add new column and rankings for each technology for new customer need of "Ease of Use: Minimize worker frustration while using system, multiplier = 3"
 - Speed from propulsion - add to list

- Cole to draft email of questions for Henry, send to Lauren through email, forward to Henry by 1/11
 - 2 & 6 throw weights and dimensions
 - 5,7 throw existence/configuration
 - How long does it take to level the frame?

- Alex & Jordon: Research and Concept Selection, Specifications (Cole to join in)

- Nick: Risk Management

- Lauren: Teleconference Prep

- Functional Decomposition - wait until D-R feedback
 - Color key for moving/propulsion & lifting
 - Eliminate shipping
 - Doesn't include any steps concerning weight distribution for cylinder hanging (Step 6). From a fixture standpoint, step 6 may require some more detail. Stations 1-4 are the same setup, but station 5 involves cylinder attach

After Teleconference @ 11:30am:

- SDR prep - who is going to invite professors?
 - Gomes - Jordon
 - Wellin - Alex
 - Mark Smith- Jordon
 - Esterman - Nick
 - Carrano - Nick
 - Cormier - Nick

Things to Do for Next Week:

Monday

- Lauren:
 - SDR room reservation on 4th floor
 - Share with John, Henry, and team

- ME's:
 - Concept Selection and Specifications
 - Prepare slides and discussion
 - Meet at 6PM
 - Cole: CG calculations, scan and send to Alex through email, post to EDGE

Wednesday



Nick:

Economic justification, where savings are, % increase/decrease
Slide for SDR



Lauren:

WBS



Team Meeting at 6:30PM:

- List of Invitees complete
- Peer Review
- Questions for audience
- Research & Benchmarking slide
- Functional Decomposition editing (see above)
- Finish Concept Selection, Pugh Matrix, Specifications
- Engineering Analysis slide
- Any supporting documentation? (print-outs)

Thursday



Guide Meeting at 9AM:

Review slides with John



Lauren:

Send slides to Henry

Finalize travel plans with Henry for Monday 1/21 or 1/22

Friday+beyond



Team:

Data management - teach EDGE

Questions page on EDGE for everyone to edit

WBS, SDR Agenda, 1-Page Summary

Wednesday, January 16, 2013

12:46 AM



1-Page Pro...

Review with team for clarity and completion (10 minutes)



WBS 1-15

Present to team for completion



Agenda

Complete with team

1/16 Team Meeting

Wednesday, January 16, 2013

12:39 AM

Things to Do for Week 6:

Monday



Lauren:

SDR room reservation on 4th floor

Share with John, Henry, and team



ME's:

Concept Selection and Specifications

Prepare slides and discussion

Meet at 6PM



Cole: CG calculations, scan and send to Alex through email, post to EDGE

Wednesday



Nick:

Economic justification, where savings are, % increase/decrease

Slide for SDR



Lauren:

WBS

1-page summary



Team Meeting at 6:30PM:



List of Invitees for SDR 1/18

IE - Marcos, John

ME - Gomes?, Mark Smith, Wellin?, Kempski?



Presentation:



Goals for review/Questions for audience

1. Concepts based on moving aspect, what should we do for lifting? Any ideas?

Lifting without a crane

2. Choose a design to go with to focus on for MSD I and MSD II with manpower.

3. Do we need to build for HOSS?

4. How far in design and prototyping should we plan for?



Finish Concept Selection



Engineering Analysis slide



Specifications - Alex tomorrow by noon



Pre-reading & printout creation:



Agenda



1 page summary - review with team



Slides



Any supporting docs?



Post risk assessment to EDGE



Discuss dress code for Friday and next week



Travel arrangements for next week

MONDAY MORNING LEAVE BY NOON - leave RIT at 8, get there by 9:30, presentation start at 10

Thursday



Guide Meeting at 9AM:

Review agenda, slides with John



Lauren:

Send slides to Henry, invitees, John by 3PM

Finalize travel plans with Henry for Monday 1/21 - Arrive at 9:30, leave at noon

Friday+beyond



Team:

Peer Review

Data management - teach EDGE

Questions page on EDGE for everyone to edit

1/17 Guide Meeting and SDR Prep

Wednesday, January 16, 2013

11:11 PM

Guide Meeting Agenda (9am-9:50am):

1. SDR - tomorrow 1/18 @ 10:30AM-12PM in 9-4425 (Henry TBD), Monday/Tuesday morning @ D-R (TBD)
2. Review slides
 - order, content, anything missing?
 - Review systems architecture, what are your thoughts?
 - have discussion during the slide presentation or at end?
3. Review SDR agenda
4. Should we change anything in our presentation from Friday to Monday at D-R?

★ Complete by 3PM TODAY:

[Lauren is available from 1PM until 3PM in the 4th floor MSD lab]

- Finalize List of Invitees for SDR 1/18
 - IE - Esterman, John
 - ME - Gomes
 - Mark Smith
- Presentation:
 - Incorporate any changes from John/team review
 - Specifications - Alex
 - Practice presentation and timing, correct timing if needed!
- Agenda:
 - Incorporate any changes from John/team review
- Pre-reading & printout creation:
 - Incorporate any changes from John/team review
 - Any reference material left to be submitted???
- Lauren - Finalize SDR packet and send to all invitees
- Lauren - Questions

Friday Plans:

Meet at 9AM?

- Practice presentation
- ★ Team Photo - Alex, please bring your camera

After SDR:

LUNCH to celebrate



Digest notes and action items for next week



Peer Review - 1 pro, 1 delta for each person

SDR 1/18 Notes

Friday, January 18, 2013

1:34 PM

Meeting Purpose:

1/18 – Meeting with professors and guide – gain valuable feedback on justifications of different concept designs and what we are missing

Materials Reviewed: see SDR packet for agenda and slides

Attendees

Marcos Esterman – IE professor, specializes in product development

Mario Gomes –ME professor, specializes in Mechanics

Mark Smith – director of MSD

John Kaemmerlen – IE professor, MSD guide

Recorded by Lauren Kraft

Meeting Date: 1/18/13 10:30AM-12:00PM

Discussion (*describe any relevant discussions not captured in actions / issues / decisions tables*):

Justifications/Explanations needed during presentation:

- Flow of line versus orientation of cart
- Show picture of open area
- Show picture of finished compressor
- Show picture of bolt pattern
- Move all units one at a time
- Minimum forces for casters/air skids are maintaining motion, not overcoming friction

Mechanical problems:

- Center of gravity envelope is very large due to major differences in cylinder symmetry – not a concern at this point
- Start, move, and stop system with ease and safety in mind – not a major concern

Look into:

- How are we going to stress this system to expose its weaknesses?
- Yellow section of CG – what happens if it gets bumped by a forklift?
- Repair and maintenance of air skids
- Combine casters and air bearing to maintain straight path if needed
- Further deflection analysis on frame – angular displacement of air bearing, does this affect load capacity?
- Air bearing contamination from floor
- Air skid-frame attachment
- Weld loads on frame
- Feedback from D-R for specification values
- Risks –
 - relying on others to build
 - leveling for air bearings – inspect floor more closely based on specs

- don't understand loading dock scenario and how our concepts integrate with it?
- What are our systems boundaries?
 - Not concerned with loading frame onto system
 - Stabilize
 - Move
 - Unload – NEED to pay attention to integration of moving system versus shipping scenario – identify issues
- Maintainability/repair for our system

Next Steps for Detailed Design:

- Project Planning – what is feasible for us?
 - Supplier purchasing lead times – include supplier integration of catalog parts
 - Build lead times – Who's building?
 - Test lead times – What tests to conduct?
 - PE approval/sign-off lead times – Who's signing off (PE approval process)?
- Look into:
 - How are we going to stress this system to expose its weaknesses?
 - Yellow section of CG – what happens if it gets bumped by a forklift?
 - Repair and maintenance of air skids
 - Combine casters and air bearing to maintain straight path if needed
 - Further deflection analysis on frame – angular displacement of air bearing, does this affect load capacity?
 - Air bearing contamination from floor
 - Air skid-frame attachment
 - Weld loads on frame
 - Feedback from D-R for specification values
 - Update risks:
 - relying on others to build
 - leveling for air bearings – inspect floor more closely based on specs
 - don't understand loading dock scenario and how our concepts integrate with it?

For D-R on Monday 1/21:

For slides, skim through project introduction through customer needs, start discussion at Specifications

Major Discussion Points:

- ***What design for translational movement should we focus on? Are we missing anything?
- ***Do our concepts conflict with the current process and tools for placing the compressor frame on our frame?
- ***How does this cause pros and cons for the shipping scenario? What is the status of the loading dock design?
- ***What are you expecting from a testing and prototyping standpoint? How far in detailed design should we go? What is the approval process in order to from a safety, design, and purchasing standpoint?

Email to team for Week 7

Friday, January 18, 2013

2:11 PM

Hey team,

Great job today with the first run of the presentation with the professors and our peer review.

For the ME's going to D-R:

As we discussed after the presentation, I am sending out the notes from today and a template for Monday's notes with some of the logistical info on it (where to meet, when, etc). Whoever takes notes can use this or another format, it's just a suggestion. As long as notes get taken and shared with the group, that's all that matters.

Also, I attached the presentation PowerPoint so you can either access it from here or from EDGE. It is titled "Presentation SDR - for DR". The only difference between this one and the one from today is that the last slide has the discussion points to focus on and not forget.

For next week:

I'm passing the torch to you guys since I'll be in Chicago and won't meet up with you until Friday morning.

For our usual Wednesday night meeting - focus on the results of the meeting with D-R and come up with a game plan for the rest of MSD I. What do we need to revise? What do we need to research more? What are we missing? Where can we start our detailed design and who's going to do what?

Use this to fuel your discussion with John for the guide meeting Thursday morning.

Keep in touch and let me know if you need more direction. I'll have my phone on me while I'm out of town and have access to email and internet.

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