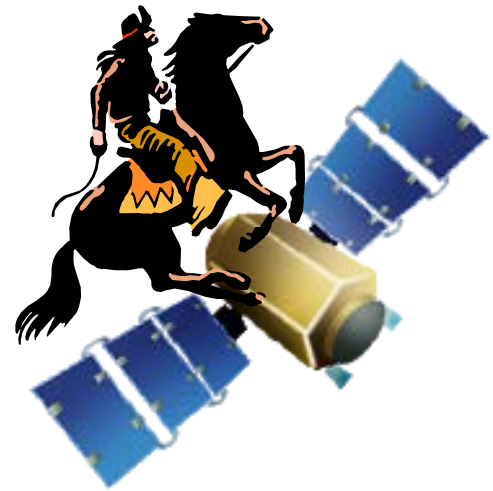
OR 680 / SYST 798 Spring 2012
Risk Identification Tool (RIT) for Aerospace Products

March 29, 2012 Interim Progress Review

Team: Space Cowboys
Hope Kelly DiGiusto
Greg Doyle
Chris Garfield
Mike Ko



Interim Progress Review
Team Space Cowboys
January 26 – March 29, 2012

Contract Information

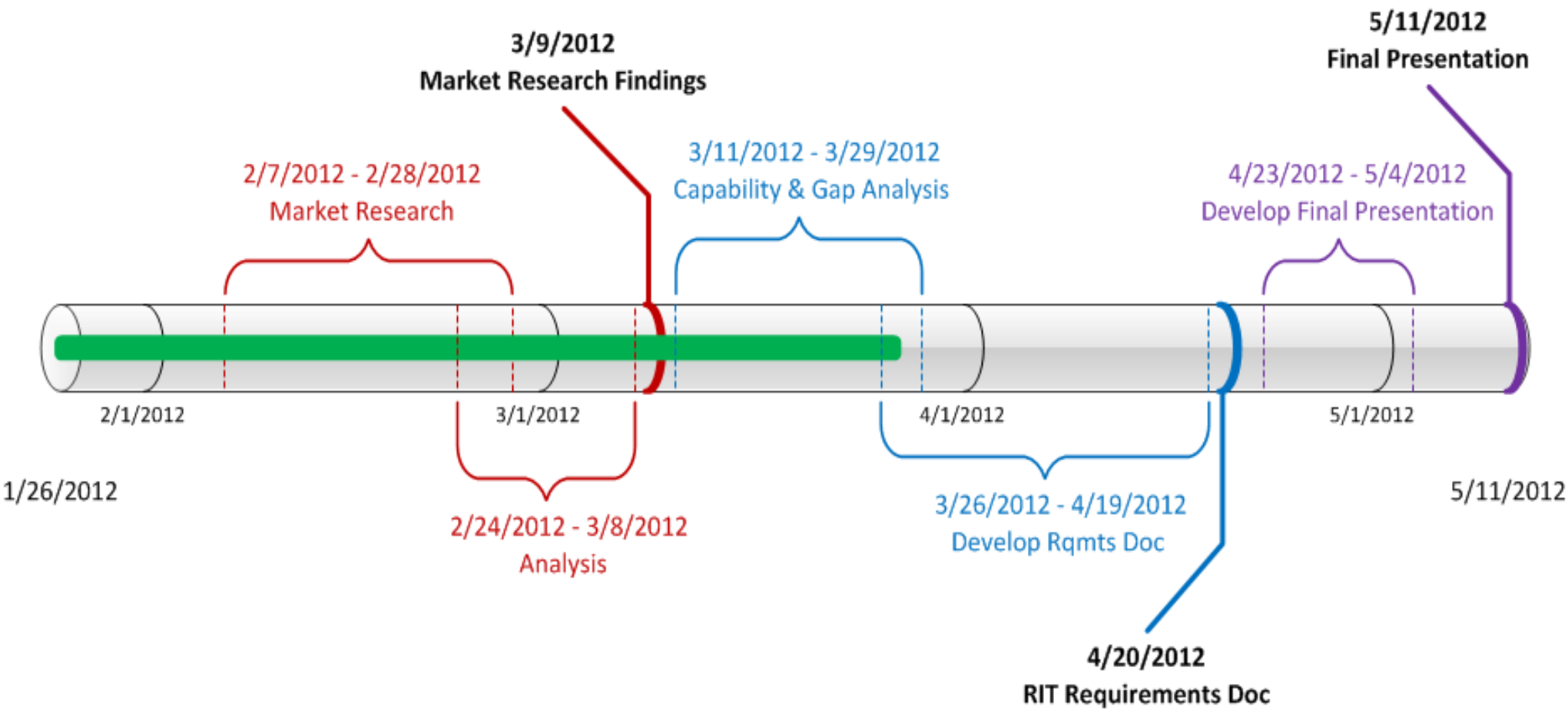
Project Group: Team Space Cowboys
Modifications: Mod 1 (02/13/2012)
Modifications: Mod 2 (03/12/2012)
Short Description of Mod:
Mod 1 – To remove development of the RFP/RFQ (Task 1.4)
Mod 2 – Changed Risk Identification Requirements Document to Risk ID Capability Development Document (CDD)
Contract Type: FFP
POP: 01/04/2012 to 05/11/2012
Report Period for This Review: 01/26/2012 to 03/29/2012

Funding Status: Incremental Funding

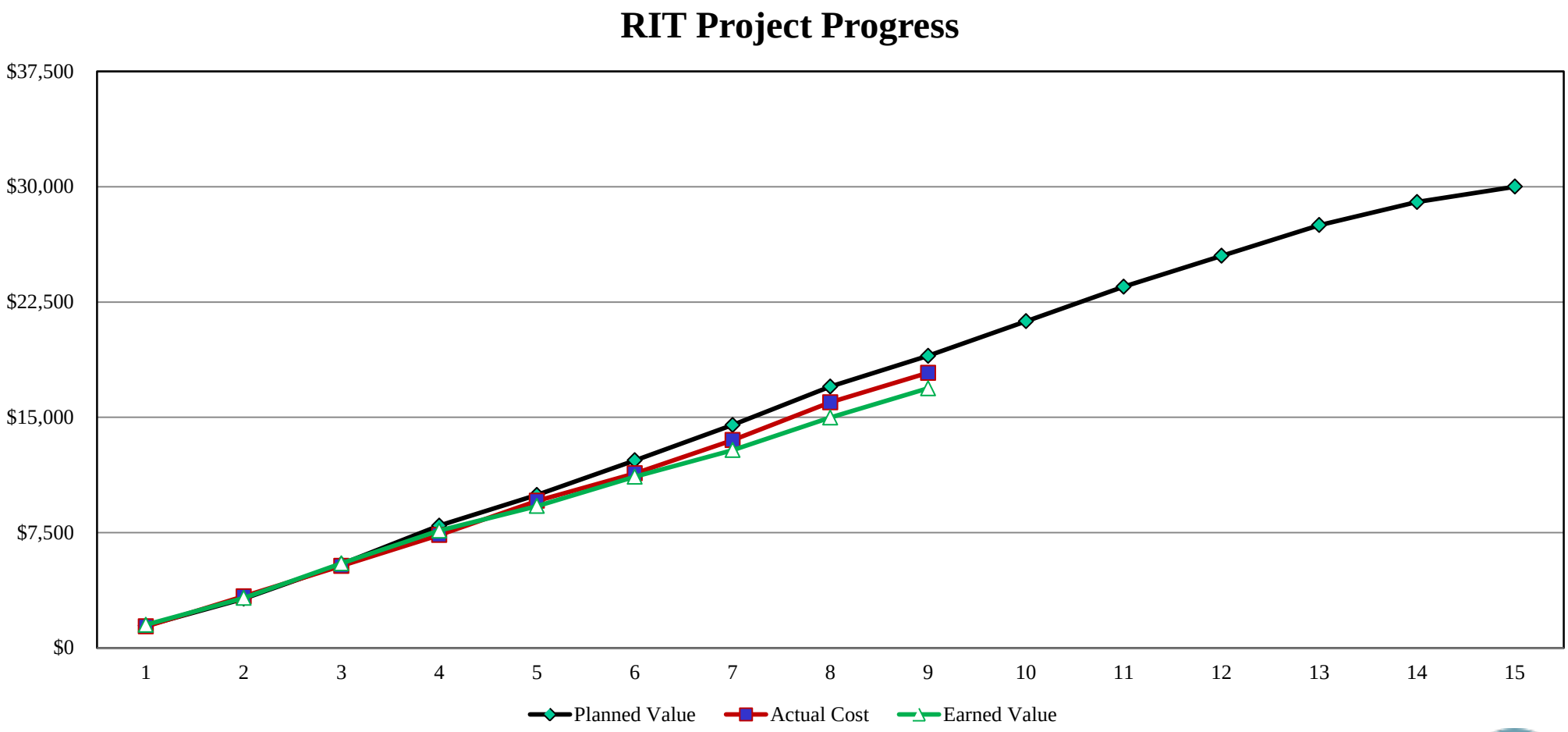
Total Contract Value – $30,000

Primary / Alternate COR – Dr. Laskey / Ms. Laurie Wiggins
Primary / Alternate COTR – Ms. Laurie Wiggins / Dr. Laskey

RIT Project Schedule (Milestones)



EVM - RIT Project Progress



EVM - Performance Metrics

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Budget at Completion **(BAC)**	$1,500	$1,750	$2,250	$2,500	$2,000	$2,250	$2,300	$2,500	$2,000
BCWP - Budgeted Cost of Work Performed **("Earned Value" - EV)**	$1,500	$1,750	$2,250	$2,125	$1,600	$1,912.50	$1,725	$2,125	$1,900
ACWP - Actual Cost of Work Performed	$1,400	$1,958	$1,983	$2,000	$2,225	$1,788	$2,163	$2,463	$1,913
BCWS - Budgeted Cost of Work Scheduled	$1,500	$1,750	$2,250	$2,500	$2,000	$2,250	$2,300	$2,500	$2,000
Cost Variance (CV)	$100	($208)	$268	$125	($625)	$125	($438)	($338)	($13)
CV %	7%	-12%	12%	6%	-39%	7%	-25%	-16%	-1%
Schedule Variance (SV)	$0	$0	$0	($375)	($400)	($338)	($575)	($375)	($100)
SV %	0%	0%	0%	-15%	-20%	-15%	-25%	-15%	-5%
Cost Performance Index (CPI)	1.07	0.89	1.13	1.06	0.72	1.07	0.80	0.86	0.99
Schedule Performance Index (SPI)	1.00	1.00	1.00	0.85	0.80	0.85	0.75	0.85	0.95
Estimate to Completion (ETC)	$0	$0	$0	$353	$556	$315	$721	$435	$101
Estimate at Completion (EAC)	$1,400	$1,958	$1,983	$2,353	$2,781	$2,103	$2,883	$2,897	$2,013
Variance at Completion (VAC)	$100	($208)	$268	$147	($781)	$147	($583)	($397)	($13)
Status based on Average Performance Index	GREEN	YELLOW	GREEN	YELLOW	RED	YELLOW	RED	YELLOW	YELLOW

Task 1.1 – Program Controls

- Completed Task:
  - Integrated Master Schedule / POA&M
  - Project Proposal
- Current Focus:
  - Bi-Weekly Project Management Review w/ Sponsor
  - Weekly EVM Assessment
- Issues/Concerns:
  - None at this time
- Way Ahead:
  - Project Website
  - Final Report & Presentation

Task 1.2 – Market Survey

- Completed Task:
  - Review of LJW Risk Management Survey
  - Review of LJW Risk Identification Tool
  - Market Research
    - Reviewed 52 Risk Tools to date
    - 28 had little or no data
  - Integrate market survey findings
    - Determined that swing weights will be used in the ranking of Risk tools on the market which would be competition for LJW
      - LJW provided the ranks for each of the functions
      - Determined top 10 tools for LJW to investigate more
    - Algorithm Feasibility
    - Social-Psychology Barriers
  - Research is complete on why is risk identification is hard and what possible risk identification tools exist
    - Not appreciating risk management value, fear of exposing weakness and lack of organizational trust are major barriers
    - Thinking tools
    - Overall risk management process course changes
    - Systems engineering product focused tools
    - System of system nature of aerospace projects justifies intensive risk identification

Level of Importance								
High			Medium			Low		
Function	Swing Weight (S_i)	Normalized Global Weight (W_i)	Function	Swing Weight (S_i)	Normalized Global Weight (W_i)	Function	Swing Weight (S_i)	Normalized Global Weight (W_i)
Checklist	100	0.05824	Manual User Identified Risk Entry	58	0.03378	Import from/Integrate into MS Excel	19	0.01107
Questionnaire	97	0.05649	Software Price	55	0.03203	Import from/Integrate into MS Word	16	0.00932
Automated Risk ID	94	0.05475	Documentation Price	52	0.03029	Version	13	0.00757
Technical Risks	91	0.05300	Maintenance Price	49	0.02854	Export to MS Project	10	0.00582
Cost Risks	88	0.05125	Monte Carlo	46	0.02679	Export to MS Power Point	7	0.00408
Schedule Risks	85	0.04950	Sensitivity Analysis	43	0.02504	Import from/Integrate into MS Project	4	0.00233
Risk Impact	82	0.04776	Uncertainty Analysis	40	0.02330	Enterprise Based	1	0.00058
Risk Score	79	0.04601	Risk Mitigation	37	0.02155	Single User	0	0.00000
Compare Pre and Post Mitigation	76	0.04426	Risk Probabilities	34	0.01980			
Appearance	73	0.04252	Quantitative Analysis	31	0.01805			
Windows XP/7	70	0.04077	Qualitative Analysis	28	0.01631			
Multiple Users	67	0.03902	Risk Categories	25	0.01456			
Export to MS Excel	64	0.03727	Mitigation Recommendations	22	0.01281			
Export to MS Word	61	0.03553						

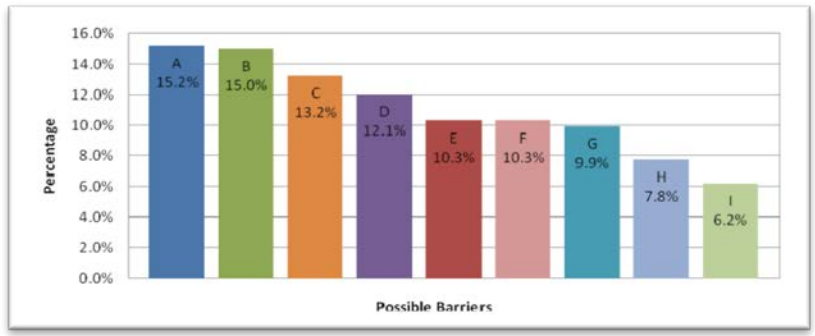
Ranking	Risk Tool	Final Score
1	@RISK-Industrial	1.043
2	@RISK-Professional	1.043
3	@RISK-Standard	1.015
4	RiskyProject	0.995
5	WelcomRisk	0.897
6	Active Risk Manager	0.769
7	Enterprise Risk Manager	0.769
8	Crystal Ball	0.752
9	RiskAid products	0.701
10	RiskDecision	0.671
23	LJW Tool	0.322

Task 1.2 – Market Survey

- Completed Task:
  - Research is complete on why risk identification is hard and what possible risk identification tools exist
    - Major barriers
      - Visible development costs gets more attention than intangibles like loss of net profit/downstream liability
      - No resources available
      - Mitigation actions require organization or process changes
      - Not appreciating risk management value,
      - Fear of exposing weakness and lack of organizational trust are
    - Thinking tools
      - Document reviews
      - Information gathering techniques (brainstorming, delphi technique, interviewing, etc)
      - System or process flow charts
    - Overall risk management process course changes
      - Ontology based reasoning (existence/non-existence of risks)
      - Replace probability and severity with trust in the risk manager and uncertainty of the situation
    - Systems engineering product focused tools
      - Hierarchy gap method (HGM) based on the WBS
      - Organization model based extrapolation
    - System of system nature of aerospace projects justifies intensive risk identification

	Possible Barriers	%
A	Visible (and tangible) development costs get more attention than intangibles like loss of net profit / downstream liability.	15.2%
B	There are no resources available.	15.0%
C	Mitigation actions may require organizational or process changes.	13.2%
D	Risk management seems difficult or there are too many risks to handle.	12.1%
E	Value of risk management not easily proved.	10.3%
F	Project teams (and managers) see reward for problem-solving, not prevention.	10.3%
G	Overconfidence (e.g. risks implicitly handled)	9.9%
H	Discussing risks goes against cultural norms (e.g viewed as negative thinking)	7.8%
I	Fatalism (e.g., software is always late)	6.2%

Figure 2. Perceived Barriers



Task 1.2 – Market Survey

- Current Focus:
  - Analysis
    - What tools and methods can feasibly be transformed into a software product is underway
    - It is clear the gap in the market for which RIT to improve on is the risk identification phase
  - Feasibility of porting these risk identification solutions into software in RIT is underway
  - Draft Findings Report is undergoing revision for final report
- Issues/Concerns:
  - None at this time

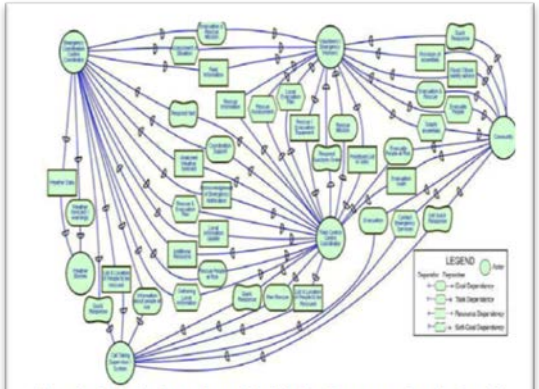


Figure 1: Strategic Dependency Model of an Emergency Service Provider.

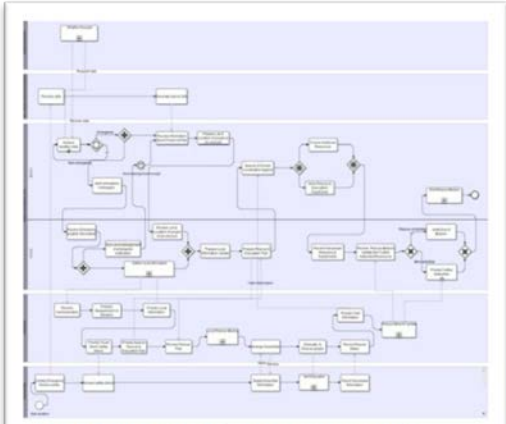


Figure 2: BPMN model of the Emergency Service Provider

Task 1.3 Risk ID CDD

- 1.3 Risk ID Capability Development Document (CDD)
  - Completed Task:
    - Initial discussion - Changed Risk Identification Requirements Document to Risk ID Capability Development Document (CDD) with guidance from LJW
      - SRS is solutions driven w/ detailed specs
      - CDD is capability / functionality document
    - CDD allows winning bidder creativity in solutions as long as it satisfies all requirements
    - SRS focuses solution in certain direction
  - Current Focus:
    - Draft preliminary Risk ID Capability Development Document (CDD) outline / structure
  - Issues/Concerns:
    - None at this time
  - Way Ahead:
    - Continue to develop Risk ID CDD per project plan

Additional Tasks

- LJW requested that we evaluate her Risk tool against two test cases
  - Risk Tool Evaluation of Spektr Spacecraft
  - Pioneering Routine Access to Space
- Individual members are evaluating LJW's tools and suggesting questions to add
- Team will combine each input to the two case studies.

Questions?