ADDENDUM A

SYSTEMS DEVELOPMENT ISSUES

This list is adapted from Yeates

(1991:pp 50-51)

SYSTEM FEASIBILITY

- Establish budgets
- Establish timelines
- Interview senior users
- Obtain objectives of system documented and agreed
- Do cost and benefit analysis and obtain the agreement from user departments
- Establish outline of proposed system
- Produce feasibility report
- Presentation of feasibility report to senior management
- Results of feasibility must be
  - **S**pecific
  - **M**easurable
  - **A**chievable
  - **R**ealistic
  - **T**ime targeted

ANALYSIS

- Design user questionnaire
- Collect complete set of documents for existing system
- Plan interviews with user departments
- Analyse data flow
- Document all findings
- Define inputs and outputs of system in user language
- Calculate volumes of data, both existing and projected
- Document findings and obtain user agreement
- Present to user management
- Define change control procedure

DESIGN

- Define methodology to be used for design
- Design input routines
- Design processes
- Design output reports
- Define files
- Design test and integration strategy
- Document overall design
- Define interfaces to other systems
- Design module and program test data
- Write program specifications
- User and project team design acceptance tests

PROGRAMMING AND TESTING

- Check program specifications
- Break down programs and modules to individual tasks
- Allocate tasks to programmers
- Produce code in chosen language
- Define module and link tests
- Ensure data available for integration testing
- Check quality of code
- Document all programs
- Ensure user provides acceptance test data
- Complete integration testing
- Complete acceptance testing
- Sign off system

DEVELOPMENT SUPPORT

- Define documentation standards
- Define computer resources required for each stage of development
- Decide on program development mode
- Define the quality plan, milestones and measurable achievements
- Define monitoring and control procedures
- Set up progress meetings within team

ADDENDUM B

CONDITIONS FOR SUCCESS AND FAILURE IN SEVEN MAJOR IT PROJECTS (Willcox)

Major issues	TradeNet	Operational strategy	CRISP	Videotex (France)	Videotex (UK & Germany)	TAURUS
Strategic framework	Clear and stable	Fluctuating government policy and industrial relations problems	Control dispersed to regions	Strong fit with government planning	Control and development left to marketplace	Ill-defined and changing
Role of government	Intervention; supportive	Isolation of IT; financial support	Financial backing	Financial and technical support; coordination	Publicity and endorsement only	"Hands-off"; legislative restrictions
Organisa-tional adaption	Trade operations and jobs redefined	Coercive rather than through participation	Stakeholder resistance	New customer-supplier relationships	Little adaption; small take-up	Manual processes automated: resistance
IT supplier problems	Clear terms of reference; strong management	Some, created by time pressure and changing requirements	Poor contracting; variable standards	Run by state-owned company	Suppliers demotivated by lack of demand	Unclear terms of reference; poor management arrangements
Change management	Supportive cultural context; strong project disciplines	High use of consultants to circumvent internal resistance	Lack of user participation	Well coordinated	Lack of demand meant no real problems	Lacked coordination and control focus
Faith in technical fix	Business needs first	Technology driven	Underplayed human and social factors	Evolutionary: see how used	Overoptimistic about its usefulness	Technology driven
Market and economic demand	Seen as economic survival issue	Mainly to cut administra-tive costs	Distributive mechanism	High take-up (at subsidised rates)	Limited to specialist groups	Demand fluctuated; stakeholder ambivalence
Skills to support implementati on	Educational infrastruc-ture; additional skills imported	External technical skills used	Skills not available	Available and used	Available but not widely used	Largely bought-in
Exploration of wider options	Review combined with proto-typing approach	Technical fix updated by time pressure and IR issues	Options not explored	Yes, through evolutionary development	Technology as solution	Only after 1993 failure

ADDENDUM C

GENERIC PROJECT RISK FACTORS
Tera Quest December, 1998

A project team might use this table to prompt their thinking about risks for their project. The team can decide which factors are relevant at what rating, then proceed to state the specific risks they suspect could affect their project.

When the project has been completed, the team should review its performance with risk management and see if there are factors to add to this table or if there are cues that should be changed to help future projects in the organisation better identify their risks.

Material in the risk factor table is organised with the following headers:

Project Domain	Name for an area in which projects might be done, with risk factors in this table generally found in this type of project.
Factor ID	A sequentially assigned number for risk factors in this domain. When new factors are added, they get the next available sequential number, thus items within a category may not be in numerical order.
Risk Category	A header that names the category in which the following risk factors belong.
Risk Factors	Named areas of potential risk to projects in this domain.
Low Risk Cues	Characteristics of this factor when it can be considered low risk to a project.
Medium Risk Cues	Characteristics of this factor when it provides a medium risk to a project.
High Risk Cues	Characteristics of this factor when it should be considered high risk to a project.

	Risk Factors	Low Risk Cues	Medium Risk Cues	High Risk Cues
	Mission and Goals			
1	Project Fit to Customer Organisation	Directly supports customer organisation mission and/or goals	Indirectly impacts one or more goals of customer	Does not support or relate to customer organisation mission or goals
2	Project Fit to Provider Organisation	Directly supports provider organisation mission and/or goals	Indirectly impacts one or more goals of provider	Does not support or relate to provider organisation mission or goals
3	Customer Perception	Customer expects this organisation to provide this project	Organisation is working on project in area not expected by customer	Project is mismatch with prior products or services of this organisation
4	Work Flow	Little or no change to work flow	Will change come aspect or have small affect on work flow(?)	Significantly changes the work flow or method of organisation
	Program Management (if project is part of a program)			
5	Goals Conflict	Goals of projects within the program are supportive of or complementary to one another	Goals of projects do not conflict, but provide little direct support	Goals of projects are in conflict, either directly or indirectly
6	Resource Conflict	Project within the program share resources without any conflict	Projects within the program schedule resources carefully to avoid conflict	Projects within the program often need the same resources at the same time (or compete for the same budget)
7	Customer Conflict	Multiple customers of the program have common needs	Multiple customers of the program have different needs, but do not conflict	Multiple customers of the program are trying to drive it in very different directions
8	Leadership	Program has active program manager who co-ordinates projects	Program has person or team responsible for program, but unable to spend enough time to lead effectively	Program has no leader, or program manager concept is not in use

	Risk Factors	Low Risk Cues	Medium Risk Cues	High Risk Cues
9	Program Manager Experience	Program manager has deep experience in the domain	Program manager has some experience in domain, is able to leverage subject matter experts	Program manager is new to the domain
10	Definition of the Program	Program is well-defined, with a scope that is manageable by this organisation	Program is well-defined, but unlikely to be handled by this organisation	Program is not well-defined or carries conflicting objectives in the scope
	Decision Drivers			
11	Political Influences	No particular politically-driven choices being made	Project has several politically motivated decisions, such as using a vendor selected for political reasons, rather than qualifications	Project has a variety of political influences or most decisions are made behind closed doors
12	Convenient Date	Date for delivery has been set by reasonable project commitment process	Date is partially being driven by need to meet marketing demo, trade show, or other mandate not related to technical estimate	Date is being driven totally by need to meet marketing demo, trade show, or other mandate; little consideration of project team estimates
13	Use of Attractive Technology	Technology selected has been in use for some time	Project is being done in a suboptimal way, to leverage the purchase or development of new technology	Project is being done as a way to show a new technology or as an excuse to bring a new technology into the organisation
14	Short-term Solution	Project meets short-term need without serious compromise to long-term outlook	Project is focused on short-term solution to a problem, with little understanding of what is needed in the long term	Project team has been explicitly directed to ignore the long-term outlook and focus on completing the short-term deliverable

	Risk Factors	Low Risk Cues	Medium Risk Cues	High Risk Cues
15	Organisation Stability	Little or no change in management or structure expected	Some management change or reorganisation expected	Management or organisation structure is continually or rapidly changing
16	Organisation Roles and Responsibilities	Individuals throughout the organisation understanding their own roles and responsibilities and those of others	Individuals understand their own roles and responsibilities, but are unsure who is responsible for work outside their immediate group	Many in the organisation are unaware of who is responsible for many of the activities of the organisation
17	Policies and Standards	Development policies and standards are defined and carefully followed	Development policies and standards are in place, but are weak or not carefully followed	No policies or standards, or they are ill-defined and unused
18	Management Support	Strongly committed to success of project	Some commitment, not total	Little or no support
19	Executive Involvement	Visible and strong support	Occasional support, provides help on issues when asked some project objectives, measures may be questionable	No visible support; no help on unresolved issues no established project objectives or objectives are not measurable
20	Project Objectives	Verifiable project objectives, reasonable requirements	Occasional support, provides help on issues when asked some project objectives, measures may be questionable	No visible support; no help on unresolved issues no established project objectives or objectives are not measurable
	Customers/Users			
21	User Involvement	Users highly involved with project team, provide significant input	Users play minor roles, moderate impact on system	Minimal or no user involvement; little user input

	Risk Factors	Low Risk Cues	Medium Risk Cues	High Risk Cues
22	User Experience	Users highly experienced in similar projects; have specific ideas of how needs can be met	Users have experience with similar projects and have needs in mind	Users have no previous experience with similar projects; unsure of how needs can be met
23	User Acceptance	Users accept concepts and details of system; process is in place for user approvals	Users accept most of the concepts and details of system; process in place for user approvals	Users do not accept any concepts or design details of system
24	User Training Needs	User training needs considered; training in progress or plan in place	User training needs considered; no training yet or training plan is in development	Requirements not identified or not addressed
25	User Justification	User justification complete, accurate sound	User justification provided, complete with some questions about applicability	No satisfactory justification for system
	Project Characteristics			
26	Project Size	Small, noncomplex, or easily decomposed		
27	Reusable Components	Components available and compatible with approach	Components available, but need some revision	Components identified, need serious modification for use
28	Supplied Components	Components available and directly usable	Components work under most circumstances	Components known to fail in certain cases, likely to be late, or incompatible with parts of approach
29	Budget Size	Sufficient budget allocated	Questionable budget allocated	Doubtful budget is sufficient
30	Budget Constraints	Funds allocated without constraints	Some questions about availability of funds	Allocation in doubt or subject to change without notice
31	Cost Controls	Well established, in place	System in place, weak in areas	System lacking or nonexistent
32	Delivery Commitment	Stable commitment dates	Some uncertain commitments	Unstable, fluctuating commitments

	Risk Factors	Low Risk Cues	Medium Risk Cues	High Risk Cues
33	Development Schedule	Team agrees that schedule is acceptable and can be met	Team finds one phase of the plan to have a schedule that is too aggressive	Team agrees that two or more phases of schedule are unlikely to be met
	Product Content			
34	Requirements Stability	Little or no change expected to approved set (baseline)	Some change expected against approved set	Rapidly changing or no agreed-upon baseline
35	Requirements Completeness and Clarity	All completely specified and clearly written	Some requirements incomplete or unclear	Some requirements only in the head of the customer
36	Testability	Product requirements easy to test, plans underway	Parts of product hard to test, or minimal planning being done	Most of product hard to test, or no test plans being made
37	Design difficulty	Well-defined interfaces; design well understood	Unclear how to design, or aspects of design yet to be decided	Interfaces not well defined or controlled; subject to change
38	Implementation Difficulty	Content is reasonable for this team to implement	Content has elements somewhat for this team to implement	Content has components this team will find very difficult to implement
39	System Dependencies	Clearly defined dependencies of the project and other parts of system	Some elements of the system are well understood and planned; others are not yet comprehended	No clear plan or schedule for how the whole system will come together
	Deployment			
40	Response or other Performance Factors	Readily fits boundaries needed; analysis has been done	Operates occasionally at boundaries	Operates continuously at boundary levels
41	Customer Service Impact	Requires little change to customer service	Requires minor changes to customer service	Requires major changes to customer service approach or offerings

	Risk Factors	Low Risk Cues	Medium Risk Cues	High Risk Cues
42	Data Migration Required	Little or no data to migrate	Much data to migrate, but good descriptions available of structure and use	Much data to migrate; several types of data or no good descriptions of what is where
43	Pilot Approach	Pilot site (or team) available and interested in participating	Pilot needs to be done with several sites (who are willing) or with one who needs much help	Only available or in crisis mode already
	Development Process			
44	Alternative Analysis	Analysis of alternatives complete, all considered, assumptions verifiable	Analysis of alternatives complete, some assumptions questionable or alternatives not fully considered	Analysis not completed, not all alternatives considered, or assumptions faulty
45	Commitment Process	Changes to commitments in scope, content, schedule are reviewed and approved by all involved	Changes to commitments are communicated to all involved	Changes to commitments are made without review or involvement of the team
46	Quality Assurance Approach	QA system established, followed, effective	Procedures established, but not well followed or effective	No QA process or established procedures
47	Development Documentation	Correct and available	Some deficiencies, but available	Nonexistent
48	Use of Defined Development Process	Development process in place, established, effective, followed by team	Process established, but not followed or is ineffective	No formal process used
49	Early Identification of Defects	Peer reviews are incorporate throughout	Peer reviews are used sporadically	Team expects to find all defects with testing
50	Defect Tracking	Defect tracking defined, consistent, effective	Defect tracking process defined, but inconsistently used	No process in place to track defects
51	Change Control of Work Products	Formal change control process in place, followed, effective	Change control process in place, not followed or is ineffective	No change control process used

	Risk Factors	Low Risk Cues	Medium Risk Cues	High Risk Cues
	Development Environment			
52	Physical Facilities	Little or no modification needed	Some modifications needed; some existent	Major modifications needed, or facilities nonexistent
53	Tools Availability	In place, documented validated	Available, validated, some development needed (or minimal documentation)	Invalidated, proprietary or major development needed; no documentation
54	Vendor Support	Complete support at reasonable price and in needed time frame	Adequate support at contracted price, reasonable response time	Little or no support, high cost, and/or poor response time
55	Contract Fit	Contract with customer has good terms, communication with team is good	Contract has some open issues which could interrupt team work efforts	Contract has burdensome document requirements or causes extra work to comply
56	Disaster Recovery	All areas following security guidelines; data backed up; disaster recovery system in place; procedures followed	Some security measures in place; backups done; disaster recovery considered, but procedures lacking or not followed	No security measures in place; backup lacking; disaster recovery not considered
	Project Management (PM)			
57	PM Approach	Product and process planning and monitoring in place	Planning and monitoring need enhancement	Weak or nonexistent planning and monitoring
58	PM Experience	PM very experienced with similar projects	PM has moderate experience or has experience with different types of project	PM has no experience with this type of project or is new to project management

	Risk Factors	Low Risk Cues	Medium Risk Cues	High Risk Cues
59	PM Authority	Has line management or official authority that enables project leadership effectiveness	Is able to influence those elsewhere in the organisation, based on personal relationships	Has little authority from location in the organisation structure and little personal power to influence decision making and resources
60	Support of the PM	Complete support by team and of management	Support by most of team, with some reservations	No visible support; manager in name
	Team Members			
61	Team Member Availability	In place, little turnover expected; few interruptions for fire fighting	Available, some turnover expected; some fire fighting	High turnover, not available, team spends most of time fighting fires
62	Mix of Team Skills	Good mix of disciplines	Some disciplines inadequately represented	Some disciplines not represented at all
63	Team Communication	Clearly communicates goals and status between the team and rest of organisation	Team communicates some of the information some of the time	Rarely communicates clearly within team or to others who need to be informed
64	Application Experience	Extensive experience in team with projects like this	Some experience with similar projects	Little or no experience with similar projects
65	Expertise with Application Area (Domain)	Good background with application domain within development team	Some experience with domain in team or able to call on experts as needed	No expertise in domain in team, no availability of experts
66	Experience with Project Tools	High experience	Average experience	Low experience
67	Experience with Project Process	High experience	Average experience	Low experience
68	Training of Team	Training planning in place, training ongoing	Training for some areas not available or training planned for future	No training plan or training not readily available
69	Team Spirit and Attitude	Strongly committed to success of project; co-operative	Willing to do what it takes to get the job done	Little or no commitment to the project; not a cohesive team

	Risk Factors	Low Risk Cues	Medium Risk Cues	High Risk Cues
70	Team Productivity	All milestones met, deliverables on time, productivity high	Milestones met, some delays in deliverables, productivity acceptable	Productivity low, milestones not met, delays in deliverables
	Technology			
71	Technology Match to Project	Technology planned for project is good match to customers and problem	Some of the planned technology is not well suited to the problem or customer	Selected technology is a poor match to the problem or customer
72	Technology Experience of Project Team	Good level of experience with technology	Some experience with the technology	No experience with the technology
73	Availability of Technology Expertise	Technology experts readily available	Experts available elsewhere in organisation	Will need to acquire help from outside the organisation
74	Maturity of Technology	Technology has been in use in the industry for quite some time	Technology is well understood in the industry	Technology is leading edge, if not "bleeding edge" in nature
	Maintenance and Support			
75	Design Complexity	Easily maintained	Certain aspects difficult to maintain	Extremely difficult to maintain
76	Support Personnel	In place, experienced, sufficient in number	Missing some areas of expertise	Significant discipline or expertise missing
77	Vendor Support	Complete support at reasonable price and in needed time frame	Adequate support at contracted price, reasonable response time	Little or no support, high cost, and/or poor response time
		Total Categories	**14**	
		Total Factors	**77**	

ADDENDUM D

ROLE PLAYERS IN RISK MANAGEMENT

ROLE	TYPE OF INVOLVEMENT
Project Manager (may be Program Manager, if working at that level)	• Drives the risk management process at the start of a project • Participates in risk identification, mitigation, and tracking progress throughout the project • Accepts or rejects the level of risk for the project
Project Team	• Performs the risk management process for this project
Risk Identification Team	• Provides input to the process for identifying risks • Includes representatives of all affected groups involved in the project, as well as any others expected to have insight into risks for this project
Risk Mitigation Team	• Performs actions to reduce the exposure from this risk, focused on either or both the probability and consequence of the risk • May be members of the project team other than affected groups, user, customer, management, and others, depending on the risk item
Process Improvement Team	• Maintains the organisation's risk management process assets, incorporating lessons learned from projects

ADDENDUM E

EXAMPLE OF RISK CHECK LIST

CHECK LIST FOR RISK MANAGEMENT	
Category: Customer Risk	
Source of Risk	**Ideas for Risk Reduction**
Meeting customer expectations (no matter how precise the terms of reference, there are typically countless questions of interpretation)	Use customer-mapping technique to organize what you know about the customer organization and its key players.
	Obtain samples of previous work that were considered satisfactory or similar systems and use these as a benchmark to gauge expectations.
	Prepare and present expanded tables of contents and page counts as early as possible.
	Present samples of similar deliverables produced in accordance with the same standards.
	Meet regularly with the Acceptor.
	Use decision request and change request procedures to maintain a record of all related discussions and control all changes relevant to the schedule and cost.
	Maintain a record of all time spent resolving these factors.
	Hold regular Steering Committee meetings.
Managing senior management perceptions	Ensure active involvement of a Steering Committee, so that: • customer management rather than the project team sets the direction for the project, • the continuous, regular involvement of customer management generates commitment, • all issues discussed and resolved increase the user comfort factor.

CHECK LIST FOR RISK MANAGEMENT	
Category: Customer Risk	
Source of Risk	**Ideas for Risk Reduction**
Political risk	Assess organizational readiness: • Is senior management committed to the project to ensure that it gets appropriate priority and support? • Do the management and staff perceive that this project will improve the organization and/or the environment in which people work? • Is there a champion with adequate clout who strongly supports the project, to the extent that he/she is willing to fight to have the project succeed? • Are people, computer capacity, money and other resources available to implement the project effectively or are there other competing demands for resources that will receive higher priority? • Do the staff members involved in the project have the necessary skills to implement the project?
	Set up a network to gather intelligence on what the key people are talking about - who speaks to whom, when and why, any issues that may be developing, et cetera
	Use change influences analysis and resistance management techniques to analyse and address driving and opposing forces.
	Prepare specific commitment strategies and plans to obtain political support.
	Establish overwhelming commitment to success at the executive level so that thoughts of failure are not permitted.
	Ensure key opinion leaders are directly involved in the project team.
	Lobby for votes ahead of time to ensure that you know the outcome of key meetings before you go in.
Changing requirements	Define scope up front in measurable terms: • horizontal scope, • vertical scope (which defines the amount of functionality to be automated versus the functionality to be addressed manually), • the limits to be applied to unbounded tasks, • other estimating assumptions, • the acceptance criteria.
	Design for information "hiding" to confine impact of likely changes and minimize their impact on the rest of the system.

CHECK LIST FOR RISK MANAGEMENT

Category: Customer Risk

Source of Risk	Ideas for Risk Reduction
	Plan incremental development, deferring changes to later increments.
Inaccurate or insufficient details in requirements statement	Build in realistic time for confirmation of requirements.
	Include limiting assumptions in contract.
Inability of user to define requirements or ever-expanding scope	Build prototype.
	Limit number of reviews of deliverables.
	Include provision in contract for replacement of Acceptor if scope is undefined by specified milestone. Include provision for termination of contract if scope is undefined by specified milestone.
Gold plating (desire to overautomate)	Establish a budget constraint to focus the effort on where there will be most payback and to force decisions that otherwise would be avoided, including early clarification of major scope issues. With reasonable constraints, a system design is apt to be spare and clean whereas without these, functionality that could be handled on an exception basis is likely to be added into the system design causing the cost and implementation effort to increase dramatically. Typically, even if the system lives through to implementation, only a fraction of such functionality is regularly used. Conduct a cost/benefit analysis. Assign each function a value in an appropriate currency (time, $, m bytes of memory, n microseconds per invocation, et cetera.).
	Design and develop to cost.
Cost is too high	Use Steering Committee to negotiate scope reduction.
	Design/develop to cost.
	Incremental development (versions).
	Scrub requirements and remove unessential.
	Consider software reuse.
	Consider productivity tools.
	Minimize formal deliverables and substitute with working papers.
Pressure for an early completion date	More rigorous up-front planning. Use the WBS for time-reduction analysis. Look for "work-ahead" items that can be started early.

CHECK LIST FOR RISK MANAGEMENT	
Category: Customer Risk	
Source of Risk	**Ideas for Risk Reduction**
	Design/develop to schedule.
	Develop incrementally (versions).
	Scrub requirements and remove unessential.
	Consider software reuse.
	Consider productivity tools.
	Minimize formal deliverables and substitute with working papers.
	Use a more experienced team.
	Build an excellent infrastructure and SDE well in advance.
	Add schedule management to the formal risk management plan to ensure visibility, and proactively address schedule variances.
	Minimize any changes during the project time frame which may impact the project (for example, changes to project staff, customer policies and procedures).
	Collocate team for maximum productivity.
Lack of user commitment	Obtain executive commitment to provide adequate end-user participation.
	Clearly define specific areas of user responsibility.
	Raise the visibility of customer dependencies at the Steering Committee.
	Appoint a user co-ordinator.
	Set up an Implementation Advisory Group to get a broad range of users involved in acceptance testing, training, user documentation, implementation roll-out, et cetera.
	Develop a plan for ensuring user understanding (for example, user surveys).
	Ensure user awareness of all issues through regular status reports and sign-offs.
	Arrange for user involvement in analysis workshops and prototyping.
	Highlight user responsibility for an Acceptance Test, involving the thorough retesting of all system functions.
	Highlight user sign-offs which put emphasis on the user confirming that they understand or complaining when they don't.
Lack of continuity of key players	Implement key personnel agreements and contractual provisions.

CHECK LIST FOR RISK MANAGEMENT	
Category: Customer Risk	
Source of Risk	**Ideas for Risk Reduction**
Specifying requirements that are difficult or impossible to meet	Staff analysts who are experts in the business area and skilled at negotiating better ways of solving the business problem.
	Use "flying squads" of credible business, application and technology specialists to resolve areas of conflict.
User training and acceptance	Set up an Implementation Advisory Group to get a broad range of users involved in acceptance testing, training, user documentation, implementation roll-out, et cetera.
	Develop a training program and accompanying training plan.
	Install a training infrastructure (for example, help desk, toll-free telephone support).
Achievement of customer's projected return on investment	Reduce exposure by breaking large projects into several smaller ones.
	Sequence projects so that those with tangible benefits are completed first.

CHECKLIST FOR RISK MANAGEMENT	
Category: Technical (Product) Risk	
Source of Risk	**Ideas for Risk Reduction**
Developing the wrong system (ie, shortfalls in functionality)	Mission analysis: study how the organization performs its mission to enable informed judgement on information requirements.
	User surveys.
	High level of end-user participation.
	Benchmark the "best practices" in equivalent systems elsewhere.
	Build prototype.
	Write user aids early.
	Ensure that a contract is in place which clearly defines scope and deliverables.
Shortfalls in the user interface	User engineering: study how the user works to gain better understanding of the requirements for the user interface.
	Build prototype.
	Write scenarios.
Unknown future changes	Design for information "hiding" to confine impact of likely changes and minimize their impact on the rest of the system.
Compatibility of technical components	Build technical prototype.
Version changes in third-party software over the life of the project	Implement formal risk management techniques and risk tracking/reporting procedures.
Shortfalls in externally supplied components (performance, stability, reliability, robustness, et cetera.)	Benchmarking.
	Inspections.
	Reference checking.
Lack of availability of components	Contingency planning.
Overall system performance (end to end)	Implement formal risk management techniques and risk tracking/reporting procedures.

CHECKLIST FOR RISK MANAGEMENT	
Category: Delivery Risk	
Source of Risk	**Ideas for Risk Reduction**
Personnel shortfalls (people and qualifications)	Staff with top talent.
	Use overqualified staff in critical situations.
	Replace junior team members with more expensive but more productive staff.
	Consider external sources (for example, subcontract).
	Implement key personnel agreements for critical resources.
	Share resources or provide shadow/assistants to minimize the time demand on key resources that are also in demand for other work.
	Provide comprehensive orientation (account, proposal, internal and customer objectives, application, technology, customer, et cetera.).
	Provide additional technical training under the direction of the Technical Architect.
	Bring in special project "start-up" teams to get the team up and running.
Unrealistic project plan (schedules and budget)	Have independent estimators prepare detailed task-based estimates and apply sanity checks.
	Use experience with sample programs (for example, program models) to validate proposed productivity rates.
	Ensure that the estimates are "owned" by the people who will be responsible to deliver to them.
	Design/develop to cost.
	Price by phase, not whole project.
	Incremental development.
	Software reuse.
	Requirements scrubbing.
	Assume risk in starting early.
Project Management	Consider nature of customer in estimating amount of project management time required.
	Implement the project management techniques in the knowledge base.
	Use overqualified Project Manager in critical situations.

CHECKLIST FOR RISK MANAGEMENT	
Category: Delivery Risk	
Source of Risk	**Ideas for Risk Reduction**
	Ensure that resolution of all issues and problems are assigned to individuals and documented in Decision Requests, Information Requests, et cetera.
Customer Management	Implement basic techniques such as Steering Committee, status reporting, CR, DR and IR procedures, as defined in the knowledge base.
	Implement activity assignment and progress tracking for customer responsibilities.
	Raise the visibility of customer dependencies at the Steering Committee (have these routinely reviewed).
	Implement formal risk management techniques and risk tracking/reporting procedures.
	Implement formal problem resolution procedures.
Problems with the Acceptor role (no Acceptor identified, inappropriate Acceptor, or multiple Acceptors)	Work with the customer executive to identify an appropriate Acceptor.
	Increase the visibility of the Project Organization Chart (the "H" format) with the Project Manager and Acceptor and make sure the communication channels are clearly identified.
Committed team	Ensure personal and project objectives have been reconciled.
	Ensure that project management fundamentals have been applied (project model, visibility, accountability and confidence).
	Ensure that the cycle of delegate, witness commitment, and monitor commitment is adhered to.
	Individual weekly review of days ahead/behind schedule with each team member.
	Weekly team meetings, as appropriate, to facilitate team communication, develop team spirit, and allow issues to be discussed at the team level on a scheduled basis rather than in interrupt mode.
	Provide productivity tools.
	Focus on team member chemistry.
	Motivate for performance.
	Rotate through project roles, where appropriate, to increase team member responsibilities and provide career development opportunities.

CHECKLIST FOR RISK MANAGEMENT	
Category: Delivery Risk	
Source of Risk	**Ideas for Risk Reduction**
	Coach poor performers.
	Replace poor performers if necessary.
New/unknown technology	Consider external sources (for example, subcontract).
	Provide for training.
Subcontractor capability	Prequalify subcontractors using interviews and formal assessment methodology (for example, SEI Assessment Methodology from Carnegie Mellon University).
	Conduct reference checks.
	Require Competitive Construction of Prototype.
	Conduct preaward audit.
	Check references (and personal commitment level).
	Substitution clause in contract with repayment for time lost.
	Specify conditions and remedy in event of poor performance.
	Plan for early delivery and include contingency plans or if delivery is missed.
Subcontractor ability to deliver as planned	Ensure delivery schedule is included in subcontract.
	Ensure that subcontractor's and prime contractor's delivery schedules coincide.
	Base payment on appropriate milestones.
	Use holdbacks.
	Obtain authorisation to be responsible for the formal performance reviews of the individuals concerned for their work on the project.
Customer ability to meet its delivery commitments	Specify conditions and remedy in event of poor performance.
	Plan for early delivery and include contingency plans if delivery is missed.
	Obtain authority to be responsible for the formal performance reviews of the individuals concerned for their work on the project.
	Routinely raise the visibility of customer performance to plan at the Steering Committee meeting.
Phase gaps	Include in contract negotiations.

CHECKLIST FOR RISK MANAGEMENT	
Category: Delivery Risk	
Source of Risk	**Ideas for Risk Reduction**
Acceptance delays	Use basic techniques such as Steering Committee, status reporting, CR, DR and IR procedures, to ensure visibility.
Decision delays	Implement basic techniques such as Steering Committee, status reporting, CR, DR and IR procedures, to ensure visibility.
Uncontrolled meeting time	Establish a meeting protocol ahead of time, for example: • effort will be made to limit the number of meetings and minimize the number of attendees at all meetings, • all scheduled meetings will require a specific agenda of matters for discussion to be prepared and distributed in advance, • duration of meeting will be stated in advance and respected, • all scheduled meetings will result in a brief summary of matters resolved, decisions and action plans resulting.
External factors (for example, strike at customer facilities)	Contingency planning.
	Contractual protection.

ADDENDUM F

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