

SYSTEMS ANALYSIS CHECKLIST

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Roger S. Pressman. McGraw Hill. 1987. pp 67-75.

ANALYSIS PLANNING

Questions

1. Are the reasons for the analysis/project clearly defined in writing?
2. Are the project limits defined (e.g. people. time frame. budget)?
3. Is there a definite completion schedule?
4. Who will comprise the project team? What experience or skills does each have in this application area?
5. Who are the "Users" and "Requesters"? Who is really paying for the work?
6. What are the objectives for the new, or modified systems? Who set them?
7. What priority has the organization set for the project?
8. What previous systems work has been done in this area? How much is still applicable?
9. What is the current state of existing systems now serving this application?
10. What are the regulatory, audit, security and political considerations unique to this system?

Products

1. *Narrative definition of the project scope*
2. *Tentative work plan for the analysis*
3. *User contact list*
4. *Tentative list of project participants and principles*
5. *List of existing systems to be affected*
6. *Statement of priorities and relative importance of the system*

USER CONTACTS

Questions

1. Are all users and user participants identified with their organizational relationships?
2. Do the users clearly understand the current system and its operation?
3. Are legitimate user complaints about the current system documented? Are the impacts of these complaints documented?
4. How much user time and effort can be expected for initial analysis?
5. With respect to the new system, which users will be supporters? obstructionists? or just indifferent?

6. What do users expect the new system to do?
7. Is there clear, top-level support for the project? If so, how much power do they wield? Who is in power and opposed? Can support be expected from "new" users of the improved system?
8. Who are the key decision makers in the user environment?
9. How many user locations? How many will require simultaneous access? How often? What level of computer sophistication?

Products

1. *An organizational chart of all participating user areas including their hierarchical relationships*
2. *Narrative description of key users background and experience*
3. *Summary of user problems with existing system and the direct/indirect costs of those problems*
4. *Work plan of expected user participation in the analysis*
5. *Summary of user expectations*
6. *Highlights of the political relationships and system support expectations from major players*
7. *Identification of other organizational or information systems that will interrelate with the proposed system*

CURRENT SYSTEM

Questions

1. What are the problems with the current system as seen by the users? By the project team? Do these agree?
2. How do other organizations perform similar functions? What is the current state of the art?
3. What other methods have been tried or used in this area? Why are these not used now?
4. What events led to the current system configuration? Are the needs, persons and politics which created the current system still relevant?
5. What organizational or regulatory changes took place during the life of the current system?
6. What development, maintenance, and operational costs will be incurred by both MIS and user areas if the existing system continues?
7. Identify the name, rank, and organizational position of the those who support, built and use the current system.
8. What are three major situational failures of the current system?
9. What capabilities are lacking in the existing system?

Products

1. *Ranked list of the current system's major faults, user problems and performance deficiencies*
2. *List of the procedural, regulatory, and practical assumptions that resulted in the current system configuration. Identify those that no longer apply and those that resulted in the most expensive changes.*

3. *Full cost projections for continued use of the current system*
4. *Comparison of the existing system to those in similar organizations and to the state of the art*
5. *Complete collection of all documentation, procedures. and available detail concerning the operation/content of the current system.*

SYSTEM OBJECTIVES

Questions

1. Are the system objectives clearly defined? Or are they loosely stated and subject to interpretation and/or definition?
2. What basic operations of the organization will be changed?
3. Will the new system replace, enhance, or work in conjunction with, an existing system? How old is the existing system?
4. Will the new system eliminate, or radically modify, any jobs? How sensitive are these positions? Who will fight their removal and who will combat the resistance?
5. Is an interim system required to mitigate immediate problems or satisfy short term goals.
6. Should the new system be phased in stages? Or is a one-time, mass conversion required?
7. What costs and benefits can be expected from the new system? What resource constraints must be met?
8. How "state of the art" will the system be and what is its realistic life expectancy?
9. How much time will be required for training and implementation? By project people? By users? Is there an ideal time of year to implement the system?

Products

1. *Comprehensive statement of system objectives*
2. *Scope of work including tentative costs, labor requirements. team makeup, and project phasing*
3. *Statement of the current system and procedures considered for change. elimination or replacement*
4. *An "organizational impact statement" detailing expected changes in positions, staffing, responsibilities. and capabilities*
5. *A commentary on roles and responsibilities of each user department and project participant*

DATA ELEMENTS AND STRUCTURES

Questions

1. Are the current data elements, files, forms, procedures etc. thoroughly documented?
2. Are the current data elements and structures logical, consistent and utilized?

3. How clean is the data base?
4. What new data elements would users like to see in an improved system? Are these feasible?
5. Is there enough flexibility in the current data structure to meet the new systems needs?
6. Can the existing database be used for the new application? How much error checking and translation programming would be required for clean conversion?
7. How much maintenance is required for the current data base?
8. How much of the archived data from the current system should be converted?
9. How much of the currently captured data is actually used? By whom? How often?
10. What faults or failures exist in the current files? How have they been mitigated?
11. How often has the current data base been changed? How has it been modified? Why?

Products

1. *Comprehensive set of format and context definitions of all data elements, files and supporting data structures.*
2. *Evaluation of the suitability of the current data base as to:*
 - content -unused areas
 - conversion -future use
 - integrity -redundancy
3. *List of expected changes. additions, deletions to the current data elements and structures -- as required by the new system.*
4. *Summary of major uses of the data files and its elements.*
5. *List of faults and failures of the existing system.*

USER INTERVIEWS

Questions

1. Are all current and potential users identified?
2. Is there a formal interview plan for each user level?
3. Are there lists of questions and objectives for interviewing each level of user?
4. Is top management supporting and publicizing the interview process? Are users and managers clear on the overall project expectations? Is top management encouraging cooperation?
5. Are all interviews scheduled at reasonable times?
6. Have analysts been trained in effective interview techniques?
7. Have all canceled interviews been rescheduled and completed?
8. Are the notes of interviews complete. adequate and legible?
9. Have interview results been summarized, compared. evaluated. and matched to objectives?
10. Have the interviewees been given adequate recognition and feedback like summary reports?

11. Are follow-up interviews warranted for particularly complex or conflicting issues?
12. Have there been progress reports to top management about the interview process? Major problems? Uncooperative users?

Products

1. *Formal interview plan*
2. *Documentation of interview results*
3. *Summary of interview results - both consensus answers and conflicting requests*
4. *Internal reports on user attitudes identifying enthusiastic support and potential obstructions*
5. *Management report on:*
 - interview results*
 - incomplete interviews*
 - cooperation*
 - change in focus or direction*

INITIAL RESEARCH ON OTHER SYSTEMS

Questions

1. What other organizations are in the same or similar business? What systems do they use?
2. What proprietary packages exist from vendors or other institutions?
3. What trade or industry associations study or catalog systems work in this area?
4. What formal literature is available on research in the area?
5. Can the system under study be subdivided into smaller systems? If so, are there more options for system selection?
6. How much time and effort should be dedicated to review and search? Should field trips and user interviews be included in the search?
7. Are the reviews of available packages a productive use of time?
8. How much systems documentation and design information is available for review prior to acquisition?
9. What kind of track record does the vendor have?
10. What kind of system support, maintenance, training and upgrade alternatives are available? At what cost?
11. Is source level code available?
12. Is the system tied to specific hardware?

Products

1. *List or target organizations and sources to review for basic knowledge on alternative approaches*
2. *Narrative of approaches used by comparable organizations*

3. *Evaluation of "state of the art" in this area*
4. *Summary report on other user contacts and vendors*
5. *Follow up recommendations for review and tracking of developments*

EVALUATION OF ALTERNATIVE PROPOSITIONS

Questions

1. How many alternative applications should be considered?
2. How much time and effort should be spent on them?
3. How detailed and complete should these evaluations be?
4. How will the evaluations be developed and documented?
5. What standards have been established for evaluation? What are the most relevant criteria to consider?
6. Who will participate in the evaluations? Will users be included in the process? If so, who? At what stage?
7. Have all the logical alternatives been considered?
8. Can we use expertise from the outside to assist in the evaluation?
9. Are the alternatives consistent with the organization's objectives for the system? With those of comparable organizations?

Products

1. *Alternative design definitions*
2. *Advantages and limitations of each alternative*
3. *Evaluation reports from each study group*
4. *Formal presentations of the alternatives to users/managers*
5. *Estimated costs for each*
6. *Assessments of the technology impact for each*
7. *Assessments of the user impact for each*

SELECTING A DESIGN ALTERNATIVE

Questions

1. Have all the alternatives been reviewed and evaluated?

2. Have the alternatives been ranked according to their ability to meet system requirements?
Have all appropriate criteria been included:

Quantitative

- initial cost
- transition costs
- service/maintenance
- hidden implementation
- validation
- space/labor/wiring

Qualitative

- user support
- vendor confidence history
- estimated life
- interface with other systems
- delivery time
- legal remedies

3. Is there a technical-management team with authority to select the most appropriate alternative?
4. Is there a clear winner?
5. What should be the primary criteria for selection?
6. Which has the greatest technical risk?

Products

1. *Detailed comparison of alternatives*
2. *Ranking of alternatives*
3. *Recommendation for best alternative*
4. *Report to users and managers on selected alternative*
5. *Summary of reasons for rejecting other alternatives*

STRUCTURAL ANALYSIS

Questions

1. Are all data elements, flows, and processes defined for the selected alternative?
2. Are the procedural, political, and organizational changes that result from the chosen alternative clearly identified?
3. Are the use and content of inputs and outputs defined in a general way?
4. Have equipment requirements for the system been estimated?
5. Is there a list of system modules?
6. Is there a tentative data conversion plan?
7. Have clerical and procedural outlines been completed?
8. What are the estimated volumes of data and transactions?
9. Have validation and security issues been adequately addressed?
10. Is there a clear testing and conversion plan?

Products

1. *System implementation plan*
2. *System flowchart*
3. *Definition of user operations and responsibility*
4. *Cost benefit analysis of options*
5. *Preliminary testing schedule*

PLANS FOR SUBSEQUENT PHASES

Questions

1. Has remaining work been subdivided into manageable tasks?
2. Are there estimates of time, money and resources available?
3. Are user support responsibilities clearly defined? Are the key users aware of them?
4. Have project milestones been set? Are the dates and project responsibilities clear?
5. Has authorization to proceed been granted?

Products

1. *Project plan and resource estimates*
2. *User support plan*
3. *Narrative plan for project management*

MANAGEMENT PRESENTATIONS AND REVIEWS

Questions

1. Have all affected levels of management, internal and external users, and technical support personnel been briefed on results of the analysis and recommendations?
2. Are presentations clear, logically formulated, and prepared for the expertise of the target audience?
3. Have the questions raised by management and key users been documented and clearly answered?
4. Have the intangibles and doubts of the project team been discussed and presented?
5. Have dissenting opinions and negative comments been adequately addressed?

Products

1. *Formal oral and written presentations*
2. *Visual aids and summaries*
3. *Authorization to proceed*

POSSIBLE INFORMATION SYSTEM BENEFITS

*Adapted from "Cost Benefit Analysis In Information Systems Development and Operation",
J. King & E.Schrems, ACM Computing Surveys, Vol 10, No. 1, MAR 1978 pp 19-34.*

ABBREVIATIONS:

MC = improved management planning or control

CR = cost reduction or elimination

IF = increased flexibility

ER = error reduction

IS = increased speed

Benefits from Contributions of Calculating and Printing Tasks

Reduction in per unit costs of calculating and printing (CR)

Improved accuracy in calculating tasks (ER)

Ability to quickly change variables and values in calculation programs (F)

Greatly increased speed in calculating and printing (IS)

BENEFITS FROM CONTRIBUTIONS TO RECORD-KEEPING TASKS

Ability to "automatically" collect and store data for records (CR, IS.ER)

More complete and systematic keeping of records (CR.ER)

Increased capacity for record keeping in terms of space and cost (CR)

Standardization of record keeping (CR,IS)

Increase in amount of data that can be stored per record (CR,IS)

Improved security in records storage (ER.CR,MC)

Improved portability of records (IF.CR.IS)

BENEFITS FROM CONTRIBUTIONS TO RECORD-SEARCHING TASKS

Faster retrieval of records (IS)

Improved ability to access records from large data bases(IF)

Improved ability to change records in data bases (IF,CR)

Ability to link sites that need search capability through telecommunications (IF.IS)

Improved ability to track who accessed and created records (ER.MC)

Ability to audit/analyze record-searching activity (MC.ER)

BENEFITS FROM CONTRIBUTIONS TO SYSTEM RESTRUCTURING CAPABILITY

Ability to simultaneously change entire classes of records (IS, IF, CR)

Ability to move large files of data about (IS, IF)

Ability to create new files by merging aspects of other files (IS, IF)

BENEFITS FROM CONTRIBUTIONS OF ANALYSIS AND SIMULATION CAPABILITY

Ability to perform complex, simultaneous calculations quickly (IS, IF, ER)

Ability to create simulations of complex phenomena in order to answer "what if?" questions (MC, IF)

Ability to aggregate data in various ways useful for planning /decision making (MC, IF)

BENEFITS FROM CONTRIBUTIONS TO PROCESS AND RESOURCE CONTROL

Reduction of need for work force in process and resource control (CR)

Improved ability to "fine tune" processes such as assembly lines (CR, MC, IS, ER)

Improved ability to maintain continuous monitoring of processes and available resources (NC, ER, IF)

POSSIBLE INFORMATION SYSTEM COSTS

PROCUREMENT COSTS

Consulting costs

Actual equipment purchase or lease costs

Equipment installation costs

Costs for modifying the equipment site (air conditioning, security, etc.)

Cost of capital

Cost of management and staff dealing with procurement

START-UP COSTS

Operating system software

Communications equipment installation (telephone lines, data lines. etc.)

Start-up personnel

Personnel searches and hiring activities

Disruption to the rest of the organization

Management required to direct start-up activity

PROJECT-RELATED COSTS

Applications software purchased

Software modifications to fit local systems

Personnel, overhead, etc., from in-house application development

Training user personnel in application use

Data collection and installing data collection procedures

Preparing documentation

Development management

ONGOING COSTS

Systems Maintenance (hardware, software, and facilities)

Physical plant (power, phone, cabling)

Hardware depreciation and obsolescence

Staffing (IS, network, hardware, programmers)