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A Prioritized Top-Ten List of Software Risk Items

- source: I believe May 1988 *IEEE Computer*, Table 4, p. 70, available 2-23-12 at: weblog.erenkrantz.com/~jerenk/phase-ii/Boe88.pdf

Top-Ten List of Software Risk Items

1. **Personnel shortfalls**
2. **Unrealistics schedules and budgets**
3. **Developing the wrong software functions**
4. **Developing the wrong user interface**
5. **Gold plating**
6. **Continuing stream of requirement changes**
7. **Shortfalls in externally furnished components**
8. **Shortfalls in externally performed tasks**
9. **Real-time performance shortfalls**
10. **Straining computer-science capabilities**

Risk-management techniques for each:

1. **Personnel shortfalls**
   - Staffing with top talent
   - Job matching
   - Teambuilding
   - Morale building
   - Cross-training
   - Pre-scheduling key people
2. **Unrealistics schedules and budgets**
   - Detailed, multisource cost and schedule estimation
   - Design to cost
   - Incremental development
   - Software reuse
   - Requirements scrubbing
3. **Developing the wrong software functions**
   - Organizational analysis

- Mission analysis
- Ops-concept formulation
- User serveys
- Prototyping
- Early users' manuals

4. **Developing the wrong user interface**
   - Task analysis
   - Prototyping
   - Scenarios
   - User characterization (functionality, style, workload)

5. **Gold plating**
   - [note: Jalote course text, p. 83: "**Gold plating** refers to adding features to the software that are only marginally useful"]
   - Requirements scrubbing
   - Prototyping
   - Cost-benefit analysis
   - Design to cost

6. **Continuing stream of requirement changes**
   - High change threshhold
   - Information hiding
   - Incremental development (defer changes to later increment)

7. **Shortfalls in externally furnished components**
   - Benchmarking
   - Inspections
   - Reference checking
   - Compatibility analysis

8. **Shortfalls in externally performed tasks**
   - Reference checking
   - Pre-award audits
   - Award-fee contracts
   - Competitive design or prototyping
   - Teambuilding

9. **Real-time performance shortfalls**

- Simulation
- Benchmarking
- Modeling
- Prototyping
- Instrumentation
- Tuning

10. **Straining computer-science capabilities**
    - Technical analysis
    - Cost-benefit analysis
    - Prototyping
    - Reference checking