

Hiring Great Testers

Building an Excellent Test Team



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Hiring Great Testers

- This webinar is excerpted from *Managing the Test Process, Third Edition*, a book for test managers
- How do we hire really great testers?
- A great employee can be ten times as effective as a poor employee, so hiring the right people is critical
- What attributes should you look for in great testers?
- What skills do testers need?
- How can you measure and grow those skills?
- How can you interview testers to make smart hiring decisions?



Qualification: Professional Pessimism

- Explore depressing possibilities of failure
 - Anticipate the worst possibilities in order to achieve best obtainable product quality
 - Not adversarial, but different outlook than development
- Remember: to assume nothing will fail during testing denies the entire history of computing
- △ Caveat: not a license to offend
 - ☞ Don't target developers with reports or take glee in failure
- Challenge: to be positive, pleasant, and the bearer of bad news, all at once



Pierre has the pessimism, but perhaps not professionalism?



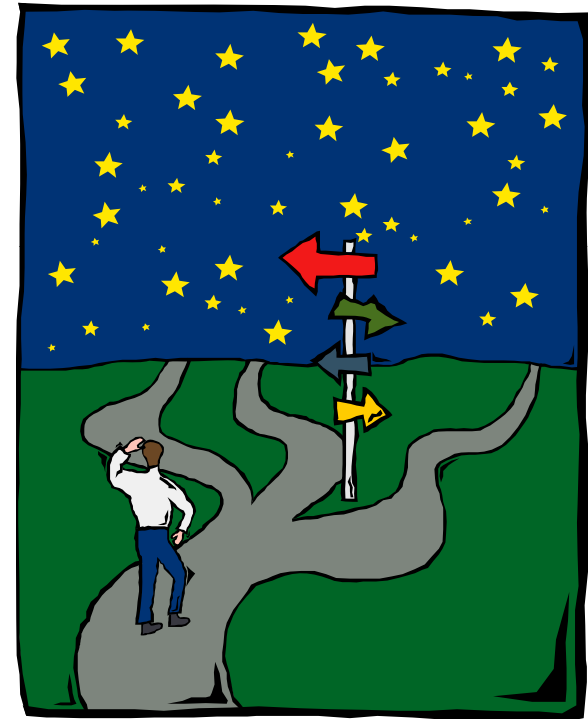
Qualification: Balanced Curiosity

- Balance need for thoroughness in any one area with need to cover many areas in a short time
- Effective test engineers have a knack for spending time where the bugs are
- Effective test engineers can do thorough bug isolation quickly
- Ineffective test engineers
 - Write tests for unlikely failure modes
 - Spend hours researching trivial bugs
- Make sure your test engineers have this ability



Qualification: Focus

- Two types of focus problems
 - Pursuing issues narrow-mindedly, losing sight of more important priorities
 - Getting distracted from key tasks
- Balance and re-evaluate priorities every so often
- Stay focused on the goals of the test project
- The test manager must assist through clear communication



A seasoned test engineer can find her way towards project goals with clear signals from her manager



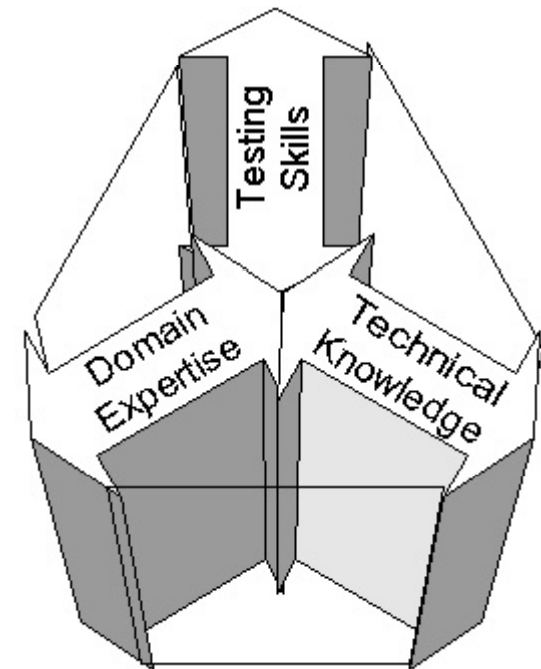
Defining Test Team Skills

- Reading
 - Specifications, e-mails, test cases, etc.
- Writing
 - Test cases, bug reports, test documentation, etc.
- Not native language dependent
- Statistics and other mathematics
- Pertinent technology, project, and testing skills
 - Technology: Programming languages and more, like operating systems, networking, HTML/Web, etc.
 - Application domain: banking, human factors, office applications, etc.
 - Testing: scripting, exploration (error guessing), automation, performance modeling, etc.



Balancing the Skills

- Good test teams have right mix of skills bas activities
- Application domain expert
 - Understands intended behavior
- Skilled tester
 - Knows quality risks and test techniques
 - Test managers also need management skills
- Technical guru
 - Aware of technical issues and limitations
- What is the right mix for...
 - ...Internet appliance testing?
 - ...nuclear medicine testing?
 - ...your project?
- Let's look at a way to measure and manage skills with a skills assessment worksheet...



The appropriate depth and length of each arrow in the figure depends on the project, process, and product



	A	B	C	D	E	F	G	H	I	J	K															
1	Software Cafeteria Test Team																									
2	Skills Assessment and Management Worksheet																									
3																										
4	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Legend</td> <td style="width: 20%;">0 = No Knowledge</td> <td style="width: 20%;">1 = Some Knowledge</td> <td style="width: 20%;">2 = Knowledgeable</td> <td style="width: 20%;">3 = Expert Knowledge</td> </tr> <tr> <td></td> <td>R = Required</td> <td>D = Desirable</td> <td></td> <td></td> </tr> <tr> <td></td> <td>TT=Test Technician</td> <td>TM = Test Manager</td> <td>MTE = Manual Test Engineer</td> <td>ATE = Automated Test Engr</td> </tr> </table>											Legend	0 = No Knowledge	1 = Some Knowledge	2 = Knowledgeable	3 = Expert Knowledge		R = Required	D = Desirable				TT=Test Technician	TM = Test Manager	MTE = Manual Test Engineer	ATE = Automated Test Engr
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8	General Qualifications																									
9																										
10	<u>Education</u>																									
11	Bachelor Science Degree (or +)	D	D	D	BS (CSE)	Ph.D. (CS)	BS (Math)	MA (Psych.)	BS (Bus.)																	
12	Test Training or Certification	D	D	D	CSQE	ISEB																				
13	Other						LFC	CPA																		
14																										
15	<u>Work Experience (Years)</u>																									
16	Test Roles	D	5R	5R	7	5	6	11	12																	
17	Non-Test, Computer	D	D	D	3	2			4																	
18	Non-Computer, Domain	D	D	D																						
19	Non-Computer, Non-Domain							10	6																	
20	Total/Any/Other	1D	5R	5R	10	7	6	21	22																	
21																										
22	<u>Professionalism</u>																									
23	Oral Communication	1R	2R	2R	3	1	2	3	2	1	2.2															
24	Written Informal Communication	1R	3R	3R	3	3	2	3	3	2	2.8															
25	Written Formal Communication	D	D	D	3	0	1	3	1	0	1.6															
26	Continuing Education	D	R	R	Yes	Yes	Yes	Yes	Yes	Yes	Yes															
27	Test Team Building/Cross-training	D	2R	2R	3	2	1	3	2	1	2.2															
28	Cross-functional Relationship Building	D	2R	2R	3	2	1	3	2	1	2.2															
29	Reading (Retention, Reasoning, and Analysis)	1R	2R	2R	3	2	2	3	2	2	2.4															
30	Business/Technical Trends (Journal Reading)	D	1R	1R	3	1	3	1	1	1	1.8															

	A	B	C	D	E	F	G	H	I	J	K
32	Testing Skills										
33	<u>General</u>										
34	Testing Standards	D	2R	2R	3	3	3	3	3	3	3.0
35	Software Development Life Cycles	D	2R	2R	3	3	3	3	2	2	2.8
36	Testing/Development Processes/Maturity	D	1R	1R	2	2	3	1	1	1	1.8
37	Change Management	D	1R	1R	2	2	3	1	1	1	1.8
38	Relating Testing to Business/SDLC	D	1R	1R	3	3	3	2	1	1	2.4
39											
40	<u>Planning</u>										
41	Estimation		D	D	3	1	1	2	1	1	1.6
42	Documentation		D	D	3	1	3	2	1	1	2.0
43	Cost of Quality		D	D	3	2	2	1	1	1	1.8
44	Quality Risk/Failure Mode and Effects Analysis		D	D	3	2	1	1	1	1	1.6
45	Quality Risk Analysis and Management		D	D	3	2	1	1	1	1	1.6
46											
47	<u>Design and Development</u>										
48	Behavioral (Black-box)	D	2R	2R	2	3	3	3	2	2	2.6
49	Structural (White-box)	D	D	1R	1	3	2	1	2	1	1.8
50	Static (Requirements, Specifications, Documentation)	D	D	2R	2	3	1	3	2	1	2.2
51	Reliability (Statistics)		2R	D	1	1	3	1	2	1	1.6
52	Performance (Modeling/Simulation/Testing)		2R	D	1	2	3	1	3	1	2.0
53	Code/Dataflow Coverage		2R	2R	2	3	1	3	3	1	2.4
54	Quality Risk/Requirement Coverage (Traceability)		1R	2R	3	2	3	1	1	1	2.0
55											
56	<u>Automation (Development)</u>										
57	COTS Execution (Silk, Validator, etc.)		3R	D	1	1	3	1	3	1	1.8
58	COTS Test Management		D	D	3	1	2	1	1	1	1.6
59	Custom Toolsmithing		3R	D	3	1	3	1	3	1	2.2
60											
61	<u>Configuration</u>										
62	Test Data Generators		1R	D	1	1	2	1	2	1	1.4
63	Version Control		1R	1R	2	2	2	1	3	1	2.0
64	Configuration Management		D	1R	1	2	2	1	1	1	1.4
65	Integration Testing		D	1R	3	2	2	1	1	1	1.8
66											
67	<u>Execution</u>										
68	Manual Scripted	D	D	3R	3	3	1	3	1	1	2.2
69	Manual Exploratory	D	D	3R	3	3	1	3	1	1	2.2
70	Automated		3R	D	1	1	3	1	3	1	1.8
71	Bug Isolation	D	3R	3R	3	3	3	3	3	3	3.0
72	Bug Reporting	D	3R	3R	3	3	3	3	3	3	3.0
73	Test Status Reporting	D	2R	2R	3	2	3	3	2	2	2.6
74	Test Metrics (Dashboard)	D	1R	1R	3	2	3	1	3	1	2.4
75											
76	Average Testing Skills				2.4	2.1	2.3	1.7	1.9	1.3	2.1



	A	B	C	D	E	F	G	H	I	J	K
78	Domain Knowledge										
79	<u>Word Processing</u>										
80	Windows Applications	D	1R	2R	3	3	2	1	3	1	2.4
81	Unix Applications	D	D	D	1	1	3	3	2	1	2.0
82	Macintosh Applications	D	D	D	0	1	0	3	3	0	1.4
83	Graphics and Figures	0	1R	2R	2	2	3	2	1	1	2.0
84	Tables	D	D	1R	1	2	3	2	1	1	1.8
85	Mathematical/Engineering	D	D	1R	1	3	3	0	0	0	1.4
86											
87	<u>Document Management</u>										
88	Windows Applications		D	D	1	2	1	0	2	0	1.2
89	Unix Applications		D	D	0	0	0	1	1	0	0.4
90	Macintosh Applications		D	D	0	0	0	1	1	0	0.4
91	Other		D	D	0	0	0	0	1	0	0.2
92	Hierarchical Storage Management		D	D	1	2	0	0	3	0	1.2
93											
94	<u>Document Interchange</u>										
95	Windows Applications		D	D	1	2	1	0	3	0	1.4
96	Unix Applications		D	D	1	0	0	1	3	0	1.0
97	Macintosh Applications		D	D	0	0	0	1	3	0	0.8
98											
99	<u>Printing</u>										
100	Color	D	D	D	0	0	1	1	2	0	0.8
101	Laser	D	D	D	1	1	1	1	2	1	1.2
102	Inkjet	D	D	D	1	1	1	1	2	1	1.2
103	Publishing/Binding		D	D	0	0	0	1	2	0	0.6
104											
105	<u>Web Publishing</u>										
106	HTML	D	D	D	1	3	3	2	3	1	2.4
107	XML		D	D	1	3	3	0	2	0	1.8
108	Other		D	D	1	1	3	0	2	0	1.4
109											
110	Average Domain Knowledge				0.8	1.3	1.3	1.0	2.0	0.3	1.3



	A	B	C	D	E	F	G	H	I	J	K
112	Technical Expertise										
113	<u>Programming</u>										
114	CVB (3GL)	D	1R	D	2	2	3	2	3	2	2.4
115	Java/C++ (OO)	D	1R	D	0	1	3	2	2	0	1.6
116	Shell (Tcl/Ksh) Scripting	D	2R	D	3	2	3	2	2	2	2.4
117	Code Complexity and Metrics		1R	D	2	0	0	2	2	0	1.2
118											
119	<u>Operating Systems</u>										
120	Windows	D	1R	1R	2	3	2	1	2	1	2.0
121	Linux	D	1R	1R	2	2	1	3	2	1	2.0
122	Solaris	D	1R	1R	2	1	1	1	2	1	1.4
123	Mac OS	D	D	D	0	2	0	3	3	0	1.6
124	Other	D	D	D	1	1	0	3	3	0	1.6
125											
126	<u>Networking/Internetworking</u>										
127	TCP/IP, FTP, RCP (Internet Architecture)		1R	1R	2	1	1	1	1	1	1.2
128	Browsers (NS, IE, etc.)	1R	1R	1R	2	3	2	2	1	1	2.0
129	Network Application Architecture (Tiered)		1R	1R	2	3	2	1	1	1	1.8
130	Network Hardware		1R	1R	2	3	2	1	1	1	1.8
131											
132	<u>Systems and Servers</u>										
133	Java-based Web Servers		1R	1R	1	3	1	1	3	1	1.8
134	Database Servers		1R	1R	2	3	1	1	3	1	2.0
135	Mainframe		1R	1R	1	2	1	1	3	1	1.6
136											
137	Average Technical Expertise				1.6	2.0	1.4	1.7	2.1	0.9	1.8



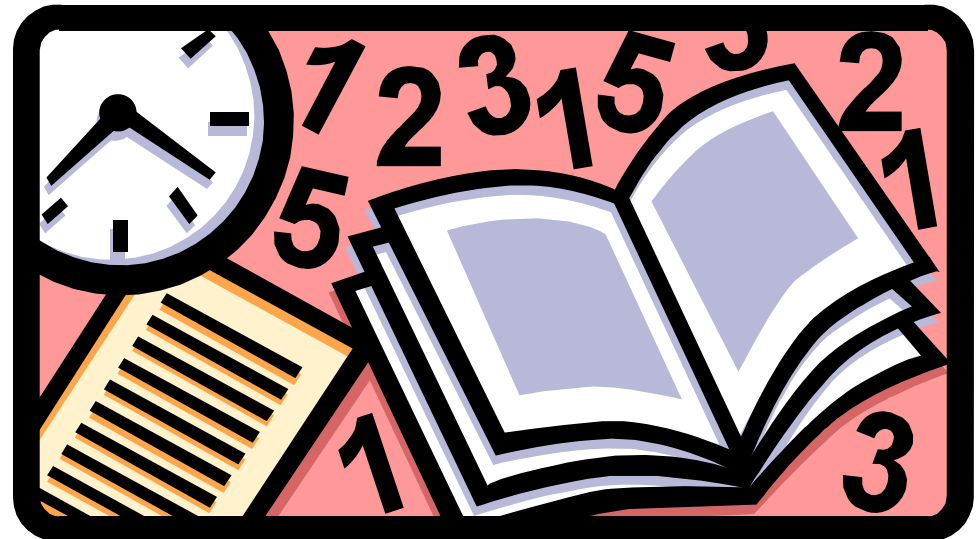
College Education

- Is testing a kind of software engineering?
 - Computer science, computer engineering, or math degrees might be good
- Is testing about domain knowledge?
 - Accounting, business, aeronautical engineering, MBA, etc., might be more appropriate
- Is testing about understanding how people use computers?
 - Psychology, kinesiology, etc., come into play here
- ✕ Opinions differ on what college degrees a tester needs, but a degree does demonstrate an ability to persevere and master a subject



Training Courses and Seminars

- ❖ Various companies and consultants offer public and private training courses like this one on testing
- ❖ Training also exists for computer skills
- ❖ Training can usually be found for domain expertise, too





Tester Skill Certification

Programs include:

- ISTQB – Foundation and Advanced
- QAI – Certified Software Test Engineer
- IIST – Certified Software Test Professional
- ASQ – Certified Software Quality Engineer
- Probably others...

Considerations

- Integrity, value, source of syllabi
- Cost/benefit
- Internationalism
- Acceptance (by colleagues, companies)
- Quality and integrity of the exams



The Job Description

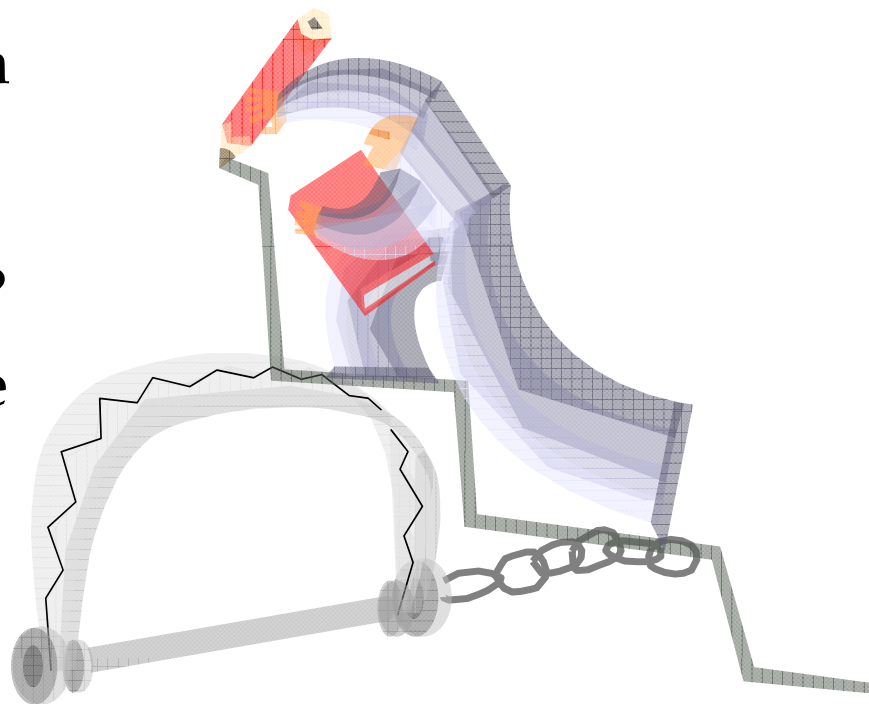
- What tasks and responsibilities are involved?
- What and how much experience?
- What specific skills are needed?
- What training, education, certification, or licenses are required?
- What are the hours, the dress code, start date, the career path, etc.?
- Remember to distinguish between required (“must have”) and desirable (“nice to have”) qualifications

Hint: You can use your skills assessment worksheet to create job descriptions



Career Path for the Candidate

- When hiring someone for a testing position, do you assume the candidate will happily be a tester forever?
- Some candidates may have other career paths in mind
- ⊘ Don't hire a tester whose career goals are inconsistent with your needs and the needs of your organization



For the long-term success of the new hire, your team, and your company, each position should be a step on each candidate's career ladder, not a trap to escape sooner or later



Gathering and Screening Resumes

- Begin your search
- Sources of candidate resumes
 - Classified ads
 - College job boards
 - Agencies/recruiters
 - The Internet
 - Your peers!
 - △ Current and former contractors (but usually there are conversion fees to the agency)
- Check resumes against the job description
 - Eliminate the unqualified
- Circulate those who look like candidates to other interviewers
 - This sometimes identifies further problems
- Do phone interview
- Check references



Resume Warning Signs

- Many people inflate their resumes
 - Just because a buzzword or acronym is on a resume, does that mean the person has meaningful mastery of the subject?
 - Check out these claims in the phone interview, esp. if no description of a particular job where the skill was applied is listed
 - You may want to verify degrees, certifications, and licenses
- Resumes can include subtle red flags
 - ⚠ Lots of job changes
 - ⚠ Gaps in employment history
 - ⚠ Frequent changes in career
- Do the references sound forced or are they enthusiastic?
 - Listen for what they do say – and what they don't
 - △ Some companies have reference checks policies



Qualification Questions

- Can use standard true/false or multiple choice questions about testing
- Base these on your favorite testing books, ISTQB syllabus, etc.
- A set of 200+ such questions, with an answer key, can be licensed from RBCS
- Other areas
 - Questions about technology
 - Questions about programming
 - Questions about the business domain
- These are not always appropriate, depending on the responsibilities of the tester



Behavioral Questions

- For the last test you ran, did you expect it to pass or fail? Why?
- Tell me about the manner and tone you used to discuss a recent bug report with other members of the project team.
- Tell me about a controversial bug report that you wrote.
- Talk to me a little about what, in general, you find rewarding about working.
- Tell me about your experiences on a project where you worked XX hours per week.
- On your last project, how did you decide the right amount of time to spend writing a test case or isolating a bug?
- Tell me about how your past managers have helped you maintain proper focus.
- Tell me about what you learned on project XYZ that you think can help us test our product.
- Tell me about a previous test project that you really enjoyed. What did like the most?
- Describe the career you see for yourself in testing.
- What do you like about testing?



Audition Interviews

- Having the candidate demonstrate first hand the skills needed to do the job
- For testers, try this
 - Give them a written test case you know will fail
 - Tell them to run the test case
 - Ask them to write bug reports on a notepad
- You may want to give test engineers a requirements or design specification document and ask them to write a test case



Conclusion

- ➊ In this webinar, we've discussed how to hire really great testers
- ➋ Remember that a great employee is ten times as effective as a poor employee
- ➌ Look for the right attributes
- ➍ Look for the right skills
- ➎ Measure and grow skills
- ➏ Interview smartly to make smart hiring decisions



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For over a dozen years, RBCS has delivered services in consulting, outsourcing and training for software and hardware testing. Employing the industry's most experienced and recognized consultants, RBCS conducts product testing, builds and improves testing groups and hires testing staff for hundreds of clients worldwide. Ranging from Fortune 20 companies to start-ups, RBCS clients save time and money through improved product development, decreased tech support calls, improved corporate reputation and more. To learn more about RBCS, visit www.rbc-us.com.

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