

# *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?**



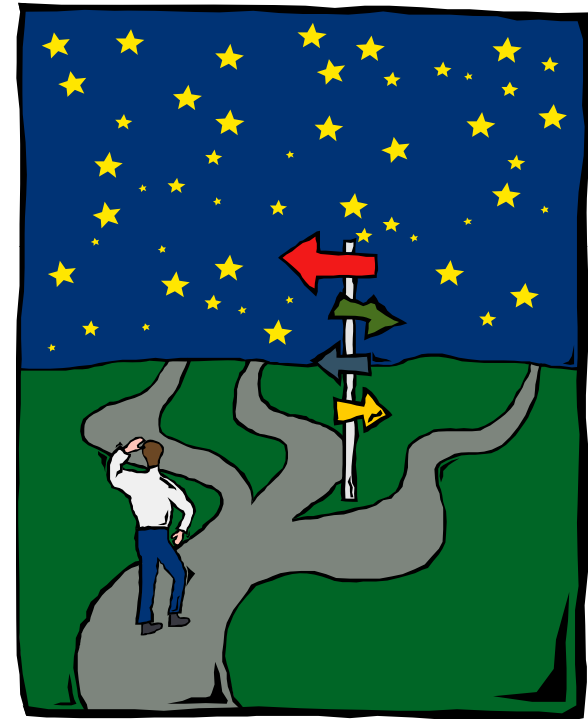
## *Qualification: Balanced Curiosity*

- 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**



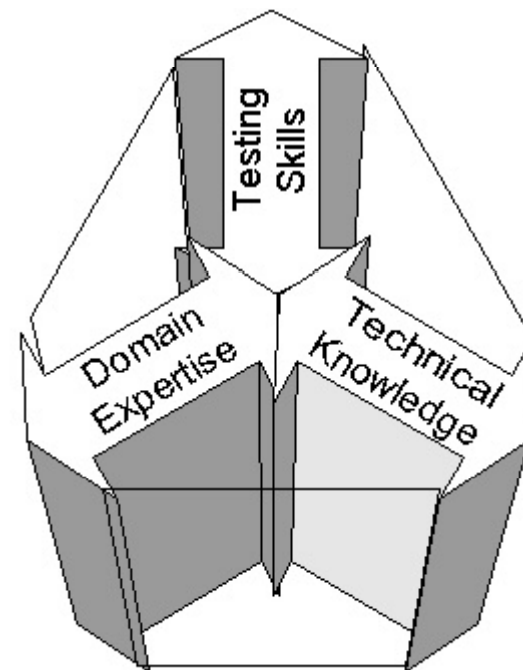
# *Defining Test Team Skills*

- 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	<b>Software Cafeteria Test Team</b>																									
2	<b>Skills Assessment and Management Worksheet</b>																									
3																										
4	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"><b>Legend</b></td> <td>0 = No Knowledge</td> <td>1 = Some Knowledge</td> <td>2 = Knowledgeable</td> <td>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>											<b>Legend</b>	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
<b>Legend</b>	0 = No Knowledge	1 = Some Knowledge	2 = Knowledgeable	3 = Expert Knowledge																						
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5																										
6																										
7	<i>Skills and Qualifications</i>	<u>TT</u> Minimum Ratings	<u>ATE</u> Minimum Ratings	<u>MTE</u> Minimum Ratings	<u>TM</u> Jake	<u>MTE</u> Lin-Tsu	<u>ATE</u> Bob	<u>MTE</u> Hitesh	<u>ATE</u> Maria	Team Minimum	Team Average															
8	<b>General Qualifications</b>																									
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	<b>Testing Skills</b>										
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	<b>Average Testing Skills</b>				<b>2.4</b>	<b>2.1</b>	<b>2.3</b>	<b>1.7</b>	<b>1.9</b>	<b>1.3</b>	<b>2.1</b>



	A	B	C	D	E	F	G	H	I	J	K
78	<b>Domain Knowledge</b>										
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	<b>Average Domain Knowledge</b>				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	<b>Technical Expertise</b>										
113	<u>Programming</u>										
114	C/VB (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	<b>Average Technical Expertise</b>				<b>1.6</b>	<b>2.0</b>	<b>1.4</b>	<b>1.7</b>	<b>2.1</b>	<b>0.9</b>	<b>1.8</b>



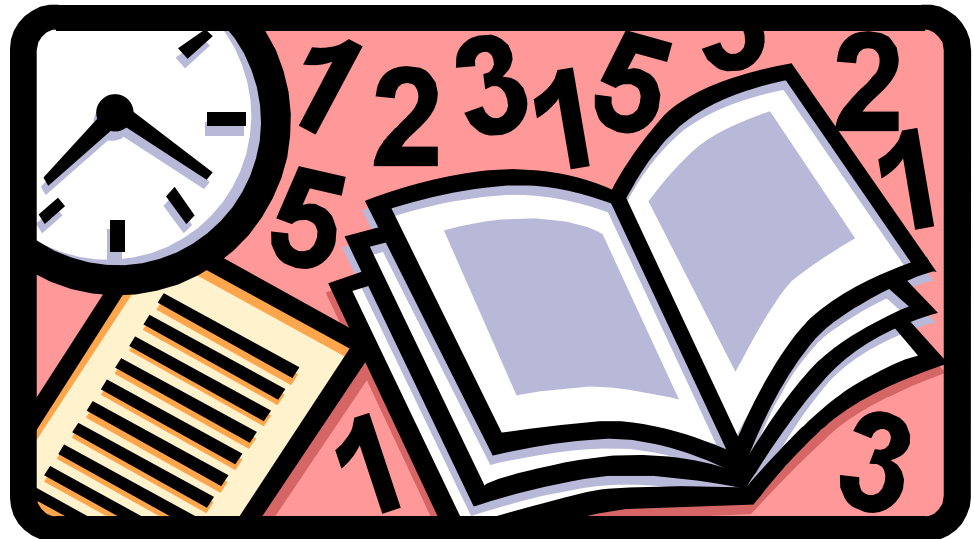
# *College Education*

- 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*

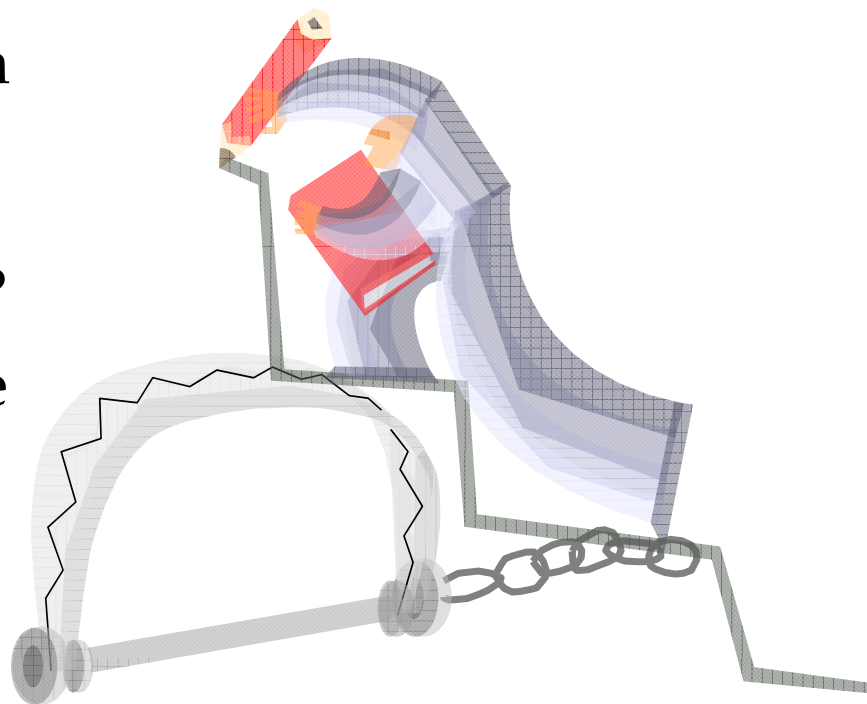
- What tasks and responsibilities are involved?
- What and how much experience?
- What specific skills are needed?
- What training, education, certification, or licenses are required?
- What are the hours, the dress code, start date, the career path, etc.?
- Remember to distinguish between required (“must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