How Fast Does a Website Need To Be?

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Performance Acceptance Criteria

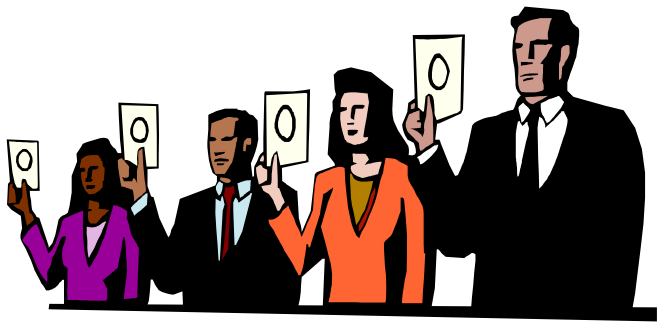
There are no industry standards!

Based on system context, determine:

- User Psychology
- System Considerations
- Usage Considerations

Then assess:

- User Expectations
- Resource Limitations
- Stakeholder Expectations



Performance Acceptance Criteria

Finally determine:

- Speed, Scalability and Stability Requirements for
  - User Experience measurements, not component metrics.
  - Batch type requirements.
  - Exception requirements.
  - Component metrics (use sparingly!).
- Composite Requirements

Collect the Information

Information gathering can be described by those categories. This process is:

- Iterative
- Not sequential
- Often heuristic, exploratory and education based

User Psychology

How long are you willing to wait for…

1) a static content page (i.e. the home page)?
2) a small informational popup (determine acceptance criteria)?
3) a pdf with no registration or login?
4) a pdf after registration?
5) a pdf after login?

If your options are…

a) no perceived wait
b) a few seconds
c) a while
d) a long time
e) forever

User Psychology

From previous sessions…

Page Type	Rating				
	No Wait	Few Seconds	A While	Long Time	Forever
1) Static Content	7%	78%	11%	4%	0%
2) Pop up	67%	21%	12%	0%	0%
3) pdf	2%	45%	40%	13%	0%
4) pdf + reg	0%	32%	43%	25%	0%
5) pdf + login	0%	37%	51%	12%	0%

System Considerations

What are the important system considerations for this site?

- Hosting cost vs. SLAs
- Client connection speeds
- Technology limitations

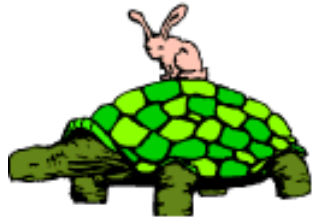
Usage Considerations

What are the important usage considerations for this site?

- Infrequent usage
- Only place to get much of the information
- Information changes infrequently
- The site is about PERFORMANCE!

User Expectations

From previous sessions of an Interactive Exercise …



Page #	Wait Time	Rating				
		No Delay / Fast	Typical	Slow	Frustrating	Unacceptable
1	4 sec	7%	76%	13%	4%	0%
2	1 sec	67%	33%	0%	0%	0%
3	6 sec	0%	23%	44%	28%	5%
4	4 sec	11%	78%	9%	1%	0%
5	7 sec	0%	18%	56%	17%	9%
6	2 sec	75%	24%	1%	0%	0%
7	5 sec	3%	49%	40%	5%	3%
8	3 sec	52%	32%	16%	0%	0%
9	8 sec	0%	1%	11%	63%	25%
10	5 sec	9%	55%	28%	8%	0%

Resource Limitations

What are the important resource limitations for this site?

- I'm the developer (and not paid to do so)
- Budget (this site generates no income)
- I have no ability to 'self-host'

Stakeholder Expectations

Translating Expectations Exercise: Part 1 (Survey)

Typical Stakeholder Expectations:

- "It needs to be fast."
- "It needs to support 10 times the current user base."
- "It needs to have 100% up-time."
- "It needs to have 100% instant recovery."
- "It needs to be easy to use."
- "It needs to generate a big profit margin."
- "It needs to have coffee on my desk in the morning."
- "It needs to cure Avian Flu."

Translating Expectations Exercise: Part 2 (Interpret)

Create the Requirements

Requirements creation can also be thought of in categories. This process is also:

- Iterative
- Not sequential
- Often heuristic, exploratory and education based

Speed Requirements

For example…

Activity type	Requirement	Goal
Normal pages	5 sec	3 sec
Reports	60 sec	30 sec
Exception activities (listed elsewhere)	3 sec	2 sec
Query execution	30 sec	15 sec
Nightly backup	1 hour	45 min

Scalability Requirements

For example…

The system should be able to maintain acceptable performance conditions under the following conditions:

- peak expected hourly usage – 500 users.
- peak expected sustained hourly usage – 300 users.
- maximum percentage of users expected to execute reports in any one hour – 75%.
- maximum number of rows to be replicated during nightly backup – 150,000.

Stability Requirements

For example…

The system will:

- return to expected performance within five minutes after an extreme usage condition, with no human interaction.
- display a message to users informing them of unexpected high traffic volume and requests they return at a later time.
- automatically recover with no human interaction after a reboot/power down.
- limit the total number of users to less than that expected to cause significant performance degradation.

Composite Requirements

For example…

The system will exhibit:

- not more than a 5-second response time for normal pages and meet all exception requirements, via intranet, 95% of the time under an extended 300-hourly-user load (IAW user community model) with under 5% user abandonment.
- not more than a 60-second response time for all reports, 95% of the time, with no user abandonment, under the conditions in item 1 above.
- 1 hour completion time for nightly batch backup of up to 150,000 rows of data.

Review

Performance Acceptance Criteria are difficult to collect, remember to consider:

- User Psychology and Expectations
- System Usage
- Stakeholder Desires
- Resource Limitations

Performance Acceptance Criteria need context

- Composite requirements are testable and related to ultimate user experience.

Summary

"**W**hat our clients can articulate usually aren't quantitative performance requirements.

The quantitative performance requirements our clients know, they usually can't articulate.

We performance analysts can articulate quantitative performance requirements but we usually don't know what they are.

And that is why determining performance requirements is an iterative process."

*Derived from experience reports and discussions presented at the Workshop On Performance and Reliability #1 (WOPR1), Oct 2003. Attendees were Calvin Arnason, James Bach, Scott Barber, Ross Collard, Linda Hamm, Douglas Hoffman, Paul Holland, David Jewell, Chris Johnson, Philip Joung, Nancy Landau, Jude McQuaid, Alan Newman, Alexander Podelko, Robert Sabourin, Bill Schonger, Andrew Sliwkowski and Roland Stens

Questions

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