How to Estimate Reliability for On-Time Software Development

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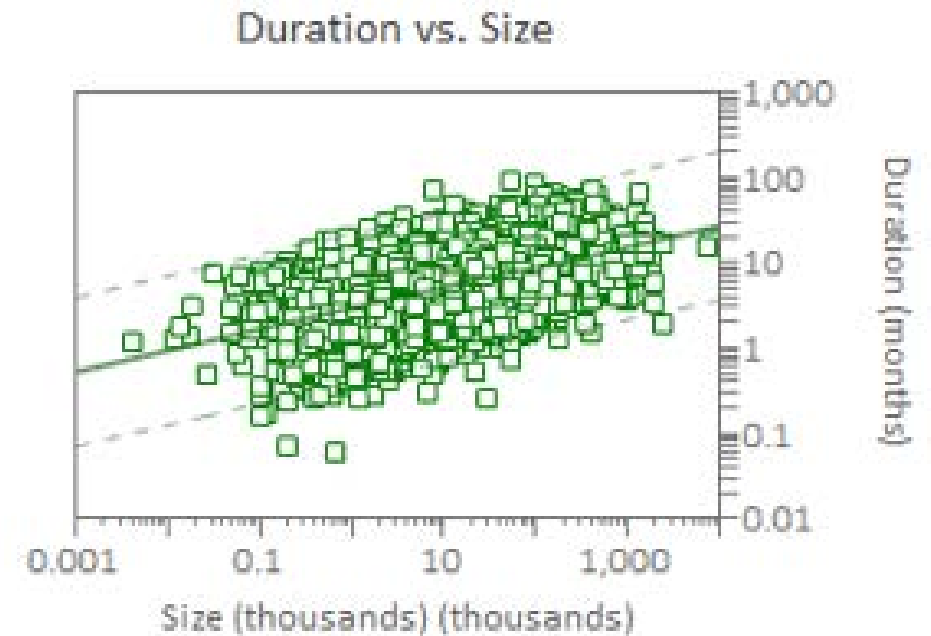**www.qsm.com**

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QSM-Who We Are

Experts in Estimating, Tracking, and Benchmarking

- 43 year track record of innovation and success

- Developers of the SLIM-Suite of estimation and metrics tools

- Leading product & services company, thought leader, and research provider

- We help our clients plan and negotiate their project and portfolio development & delivery more effectively, saving big money and time

The QSM Industry Database - Over 43 years of Research

- Industry-leading research that validates the SLIM estimation model, over 13,000 completed projects

- Gives us a good understanding of the fundamental relationships

- Provides the latest information on software cost, duration, effort, reliability, team size, and scope, which we leverage to help our clients

Duration vs. Size

The Software Production Equation

Delivered System **Size**   Is proportional to   **Effort**   over   **Time**   at some level of   **Productivity**

Value Delivered	Resources Expended	Duration Required	**Influenced by** Capability and Difficulty of the task

This equation can be re-arranged to solve various estimation problems

We Know from Analyzing Historical Data that…

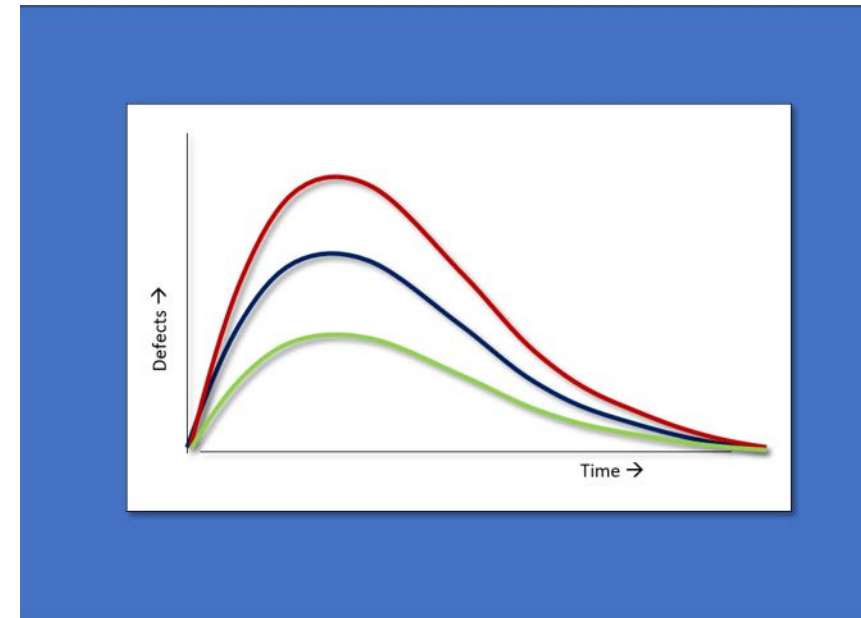Size, Time, Effort, and Productivity directly affect Reliability

The Rayleigh Defect Model

"We can start with the thought that errors are proportional to the work done,

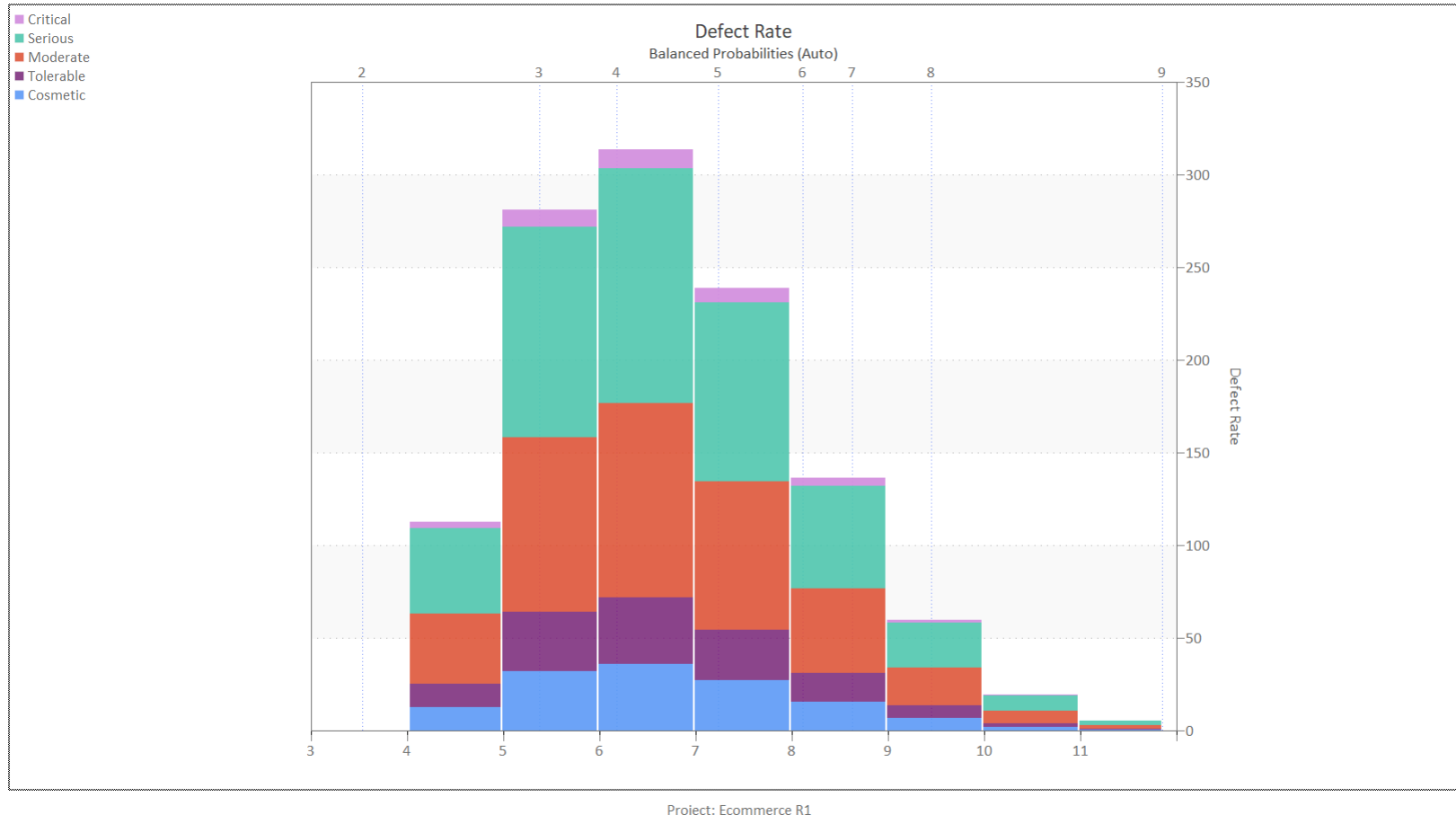the work done is proportional to the effort put in,

and effort put in follows a Rayleigh curve."

-- Putnam & Myers

Larry Putnam Sr. discovered that the Rayleigh curve is a good predictor of software defects

The Rayleigh Defect Model Leveraged in SLIM-Estimate

Project: Ecommerce R1

Benefits to Estimating Reliability

- Increases the chance of delivering a high-quality product

- Increases the chance of meeting cost, staff, schedule & quality targets

- Improves communication and trust with stakeholders

Polling Question- Approximately 1 minute to answer

How do you currently estimate reliability?

- Experience based

- Model-based estimation

- Gut feel

- Detailed spreadsheets

- None of the above

SLIM-Suite for Estimating, Tracking, and Benchmarking

Pause for Questions

Questions?

Please feel free to contact me with any questions. Thank you!

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