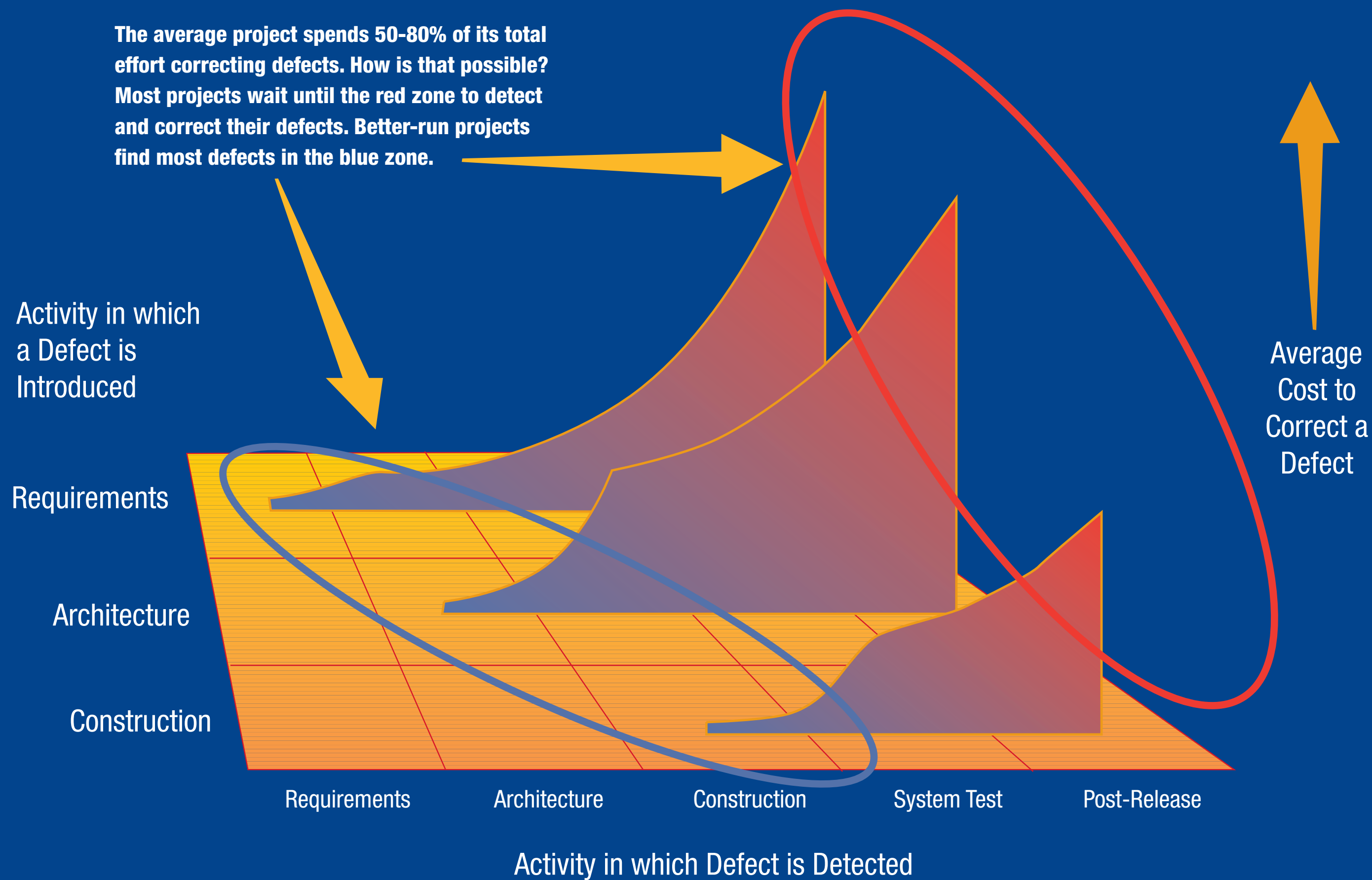# Software Development's Defect Cost Increase

Studies over the last 25 years have proven that it pays to remove defects early. Organizations have found that purging requirements and architecture errors before detailed construction begins reduces rework costs by 90-99%, compared to correcting those errors during system test or after release.

Mistakes are unavoidable, and so the principle is to find each error close to the time at which it was introduced. The longer a defect stays in the software food chain, the more it contaminates work further down the chain. Since requirements and architecture are done first, those defects have the potential to contaminate more work and to be most expensive.

The average project spends 50-80% of its total effort correcting defects. How is that possible? Most projects wait until the red zone to detect and correct their defects. Better-run projects find most defects in the blue zone.

Activity in which a Defect is Introduced

Requirements

Architecture

Construction

Average Cost to Correct a Defect

Requirements   Architecture   Construction   System Test   Post-Release

Activity in which Defect is Detected

Iterative or Sequential?

The Defect Cost Increase Curve applies whether the project is highly sequential (doing 100 percent of requirements and design up front) or highly iterative (doing only a small percentage of requirements and design at a time). By focusing on correcting defects earlier rather than later in the development of each feature, you can cut development costs and schedules by factors of two or more. Schedules become more predictable, too.

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