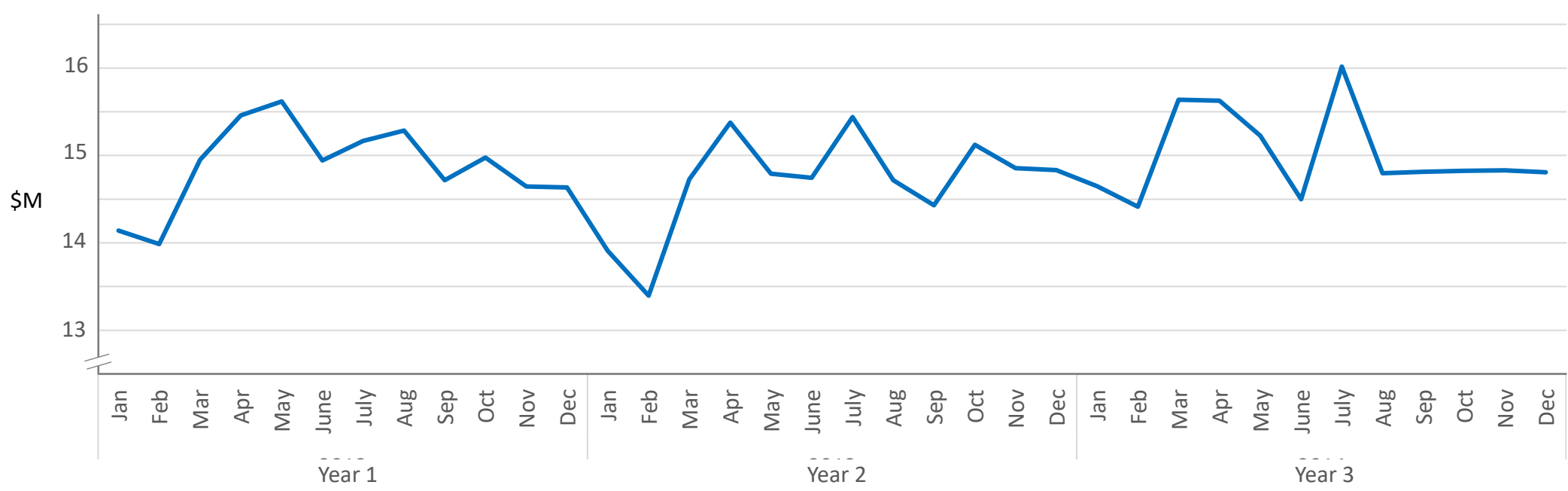


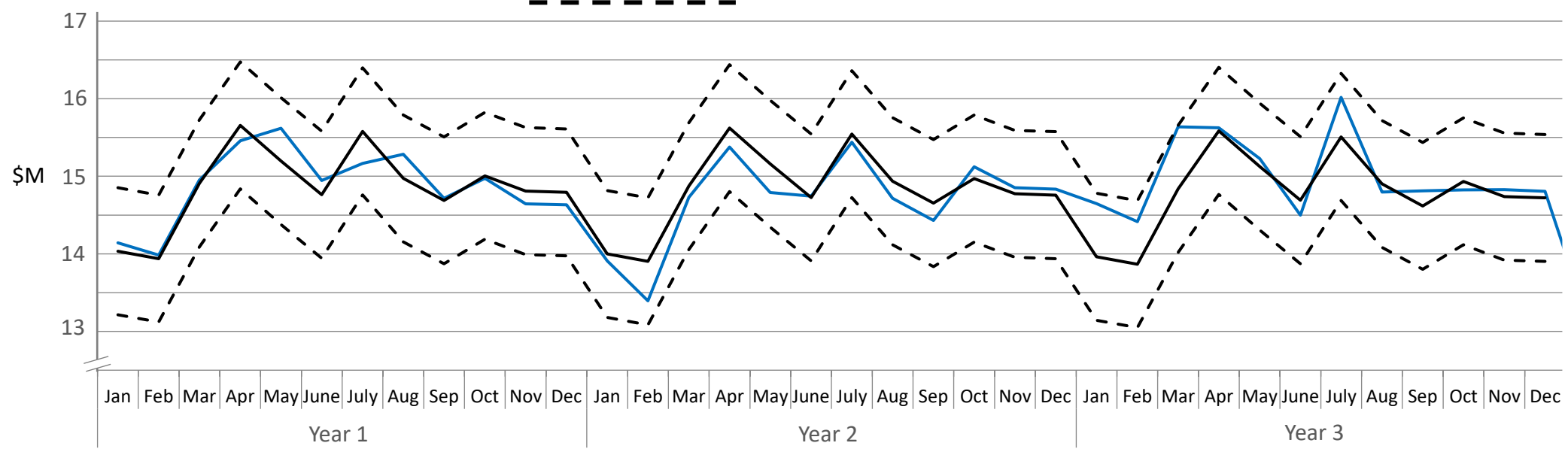
CUSUM: A Deceptively Clever but Simple Diagnostic Graph.

The cumulative sum (CUSUM) graph has been around since the 1950s but little used today. By adding variances from forecast accumulatively over time, the noise cancels out and the signal (=business story) is amplified. The resulting CUSUM graph times the onset of real business shifts exactly. Whereas reasonable people often disagree about timing and causes of a revenue or cost shift, the CUSUM compels everyone to see what’s really going on. This complex case example on an enormous scale shows the elegant simplicity of the powerful CUSUM.

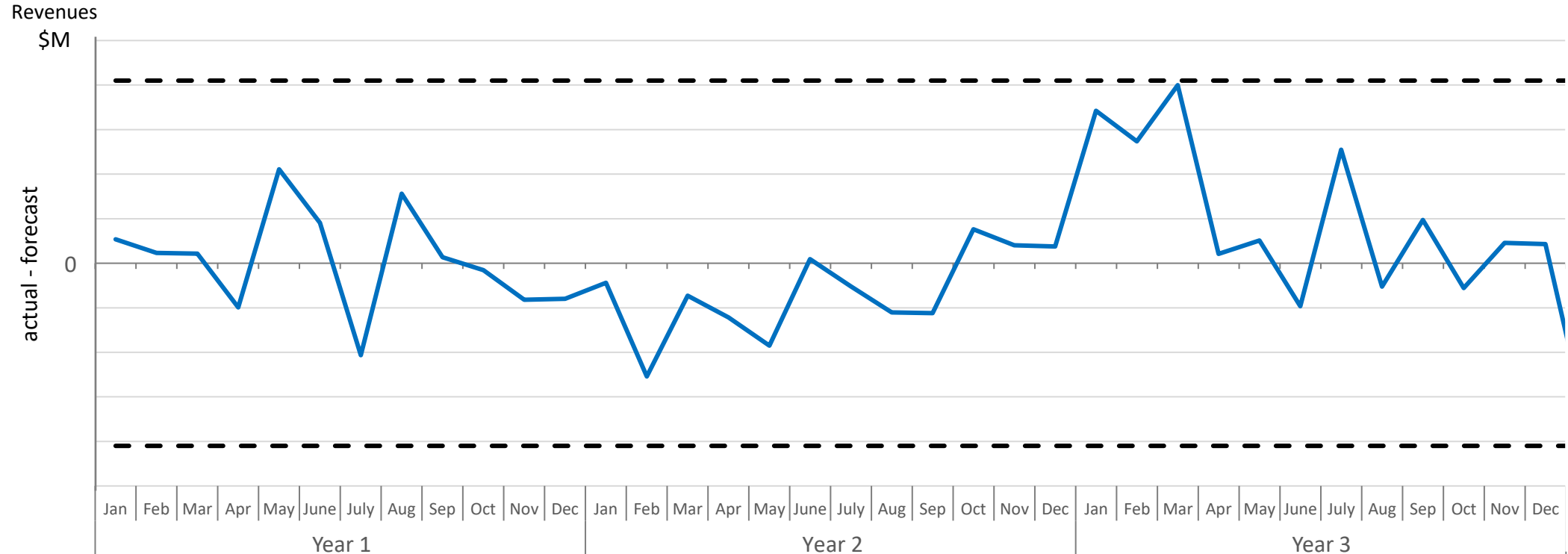
Revenues appeared unpredictable...



...until a statistical forecast revealed revenues predictable and stagnant.

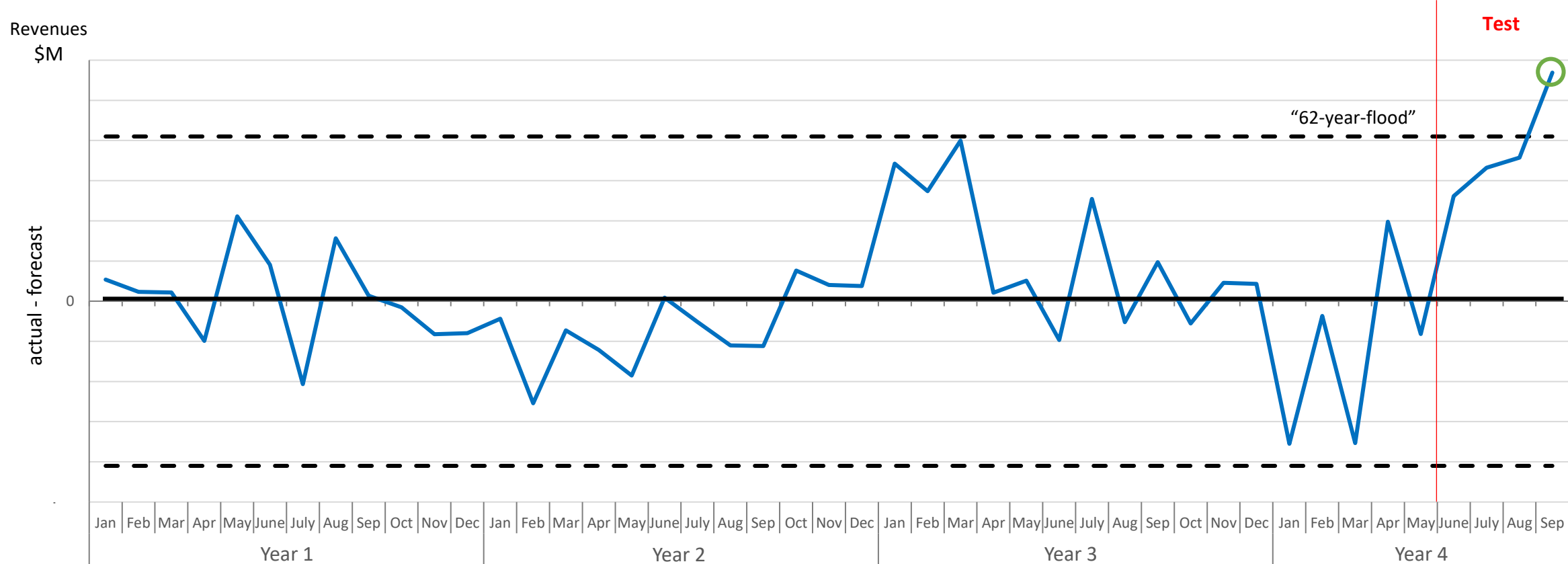


(Actual –forecast) was even easier to “see”...

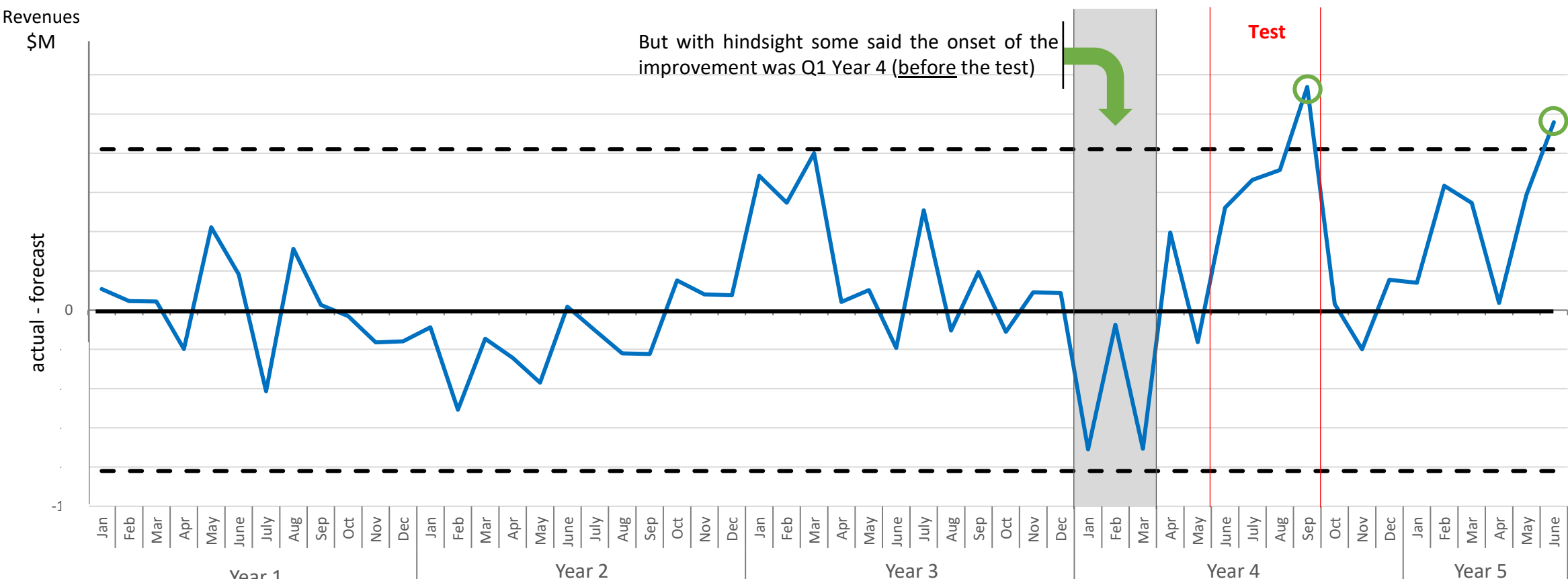


... revealing also slight “ups and downs”.

Multi-factorial testing (of nearly a hundred changes in 5 systems simultaneously) increased revenues suddenly (well above the “62-year flood” level)

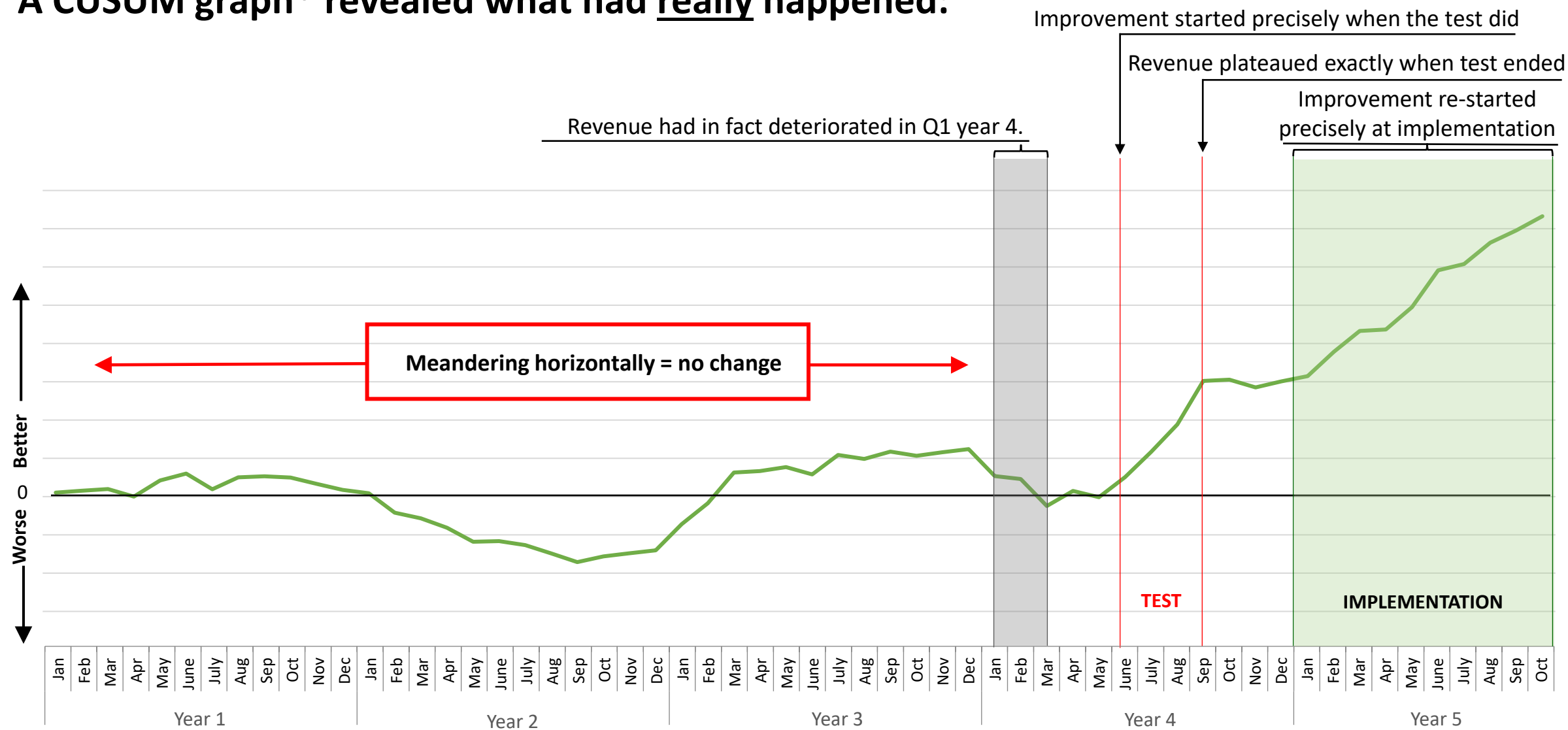


About 20 of the changes helped significantly and were implemented*



* It took 2-3 months to train 2,000+ employees in 3 countries

A CUSUM graph* revealed what had really happened:



*On previous graph, add monthly deviations from 0, accumulatively to cancel noise and amplify signal
The CUSUM graph is easy to read - up is good, down is bad.