



High Performance Estimates: A *high maturity case study*

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Acentia at a Glance

- ❖ Headquartered in the Washington, DC area
- ❖ Mid-Size consulting company to Federal Clients
- ❖ ISO 20K and 9001 Certified
- ❖ CMMI for Development ML4 and Services ML3 Appraised
- ❖ Over 30 ITIL Certified Staff
- ❖ Over 60 Certified Project Management Professionals





Program Background

- Acentia was awarded the a large software maintenance contract in 2007
- We deliver quarterly maintenance releases
- Each quarterly release is developed over a 6 month period
- Our responsibilities include the full life cycle of maintenance development activities: requirements analysis, design, development, testing, etc



Program Size and Acentia Experience

Size of Application as of July 2013

1,035 Source Elements (COBOL, ALC programs)		
1,548,000 System Lines		
Item	System Lines	% System Lines
COBOL Source Code	1,300,000	84%
ALC (Assembler Code)	155,000	10%
608 JCLs/PROCs/UTILs	65,800	4%
706 Control Cards	27,100	2%

Staff Years of Experience

Years of Experience Working on the program			
Years of Experience with the program:	0 to 5	6 to 10	Over 10
Number of Staff:	23	6	25
% of Staff:	43%	11%	46%
Average Years Experience: 9.4		Total Years Experience: 505	



Importance of Change Request LOE Estimation

- There is a fixed bucket of 14,425 labor hours for delivering each release
- Customer must be able to confidently prioritize which change requests will be included in which release
 - Several teams working on external systems have to be coordinated with the program
 - Adjustments to a given release plan could be disruptive to the overall plan across systems
- Customer evaluates the accuracy of our estimates as one factor in award fees

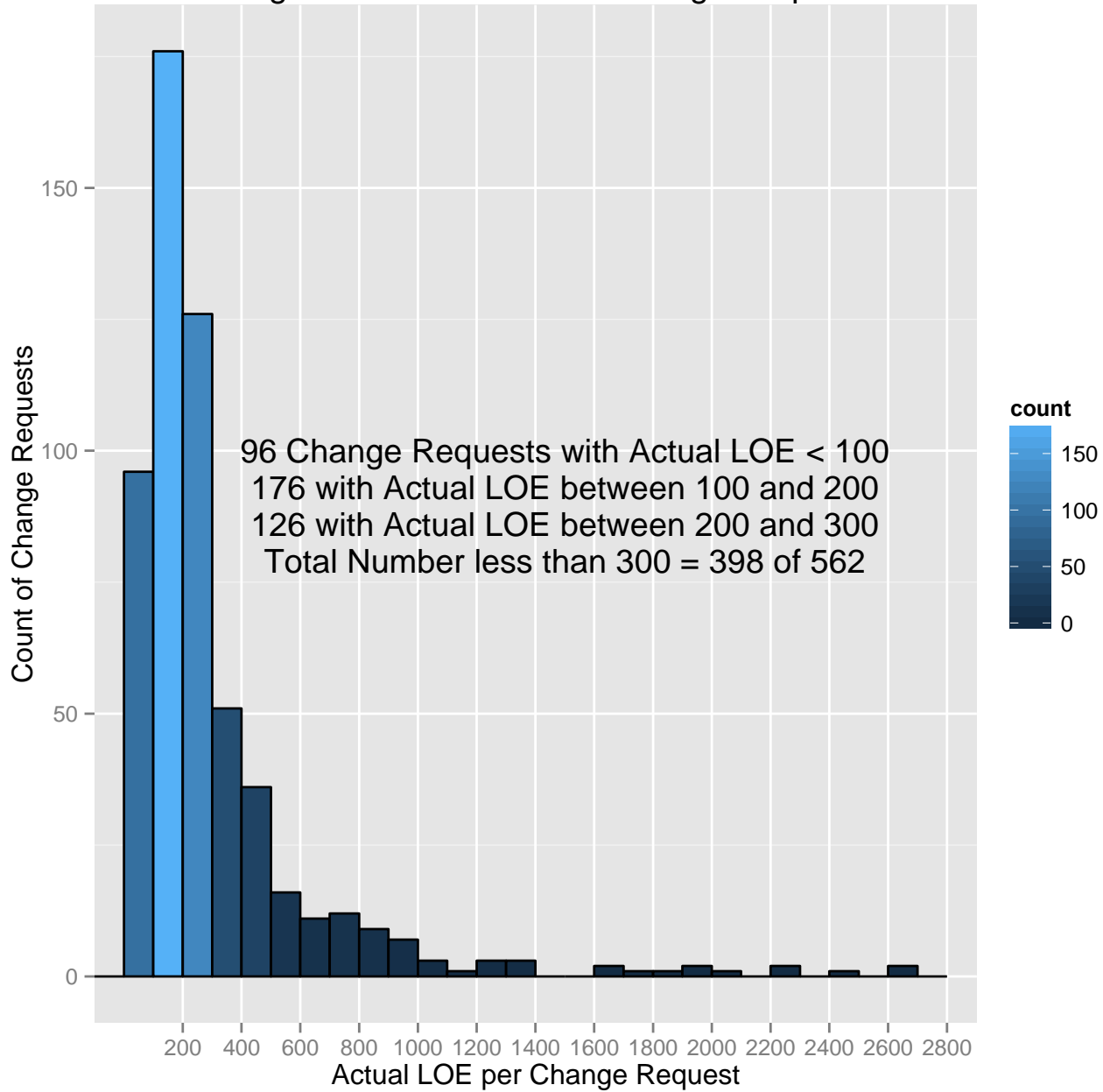


Estimation Process & Data

- Two estimates of LOE are produced using a documented, consistent estimation process:
 - Initial or “Point of Contact” Estimate
 - Updated or revised estimate at 90-days
- Our data consist of:
 - Initial Estimate of LOE and Actual LOE per Change Request (CR) per Release
 - 562 CRs from 21 Releases
 - ♦ Release 1, 2008 (R08.1) to
 - ♦ Release 2, 2013 (R13.1)
 - LOE is for development only, does not include management or “overhead” hours
- We will look at
 - Actual LOE vs Initial Estimate
 - $100\% * (\text{Initial Estimate} - \text{Actual LOE}) / \text{Actual LOE}$

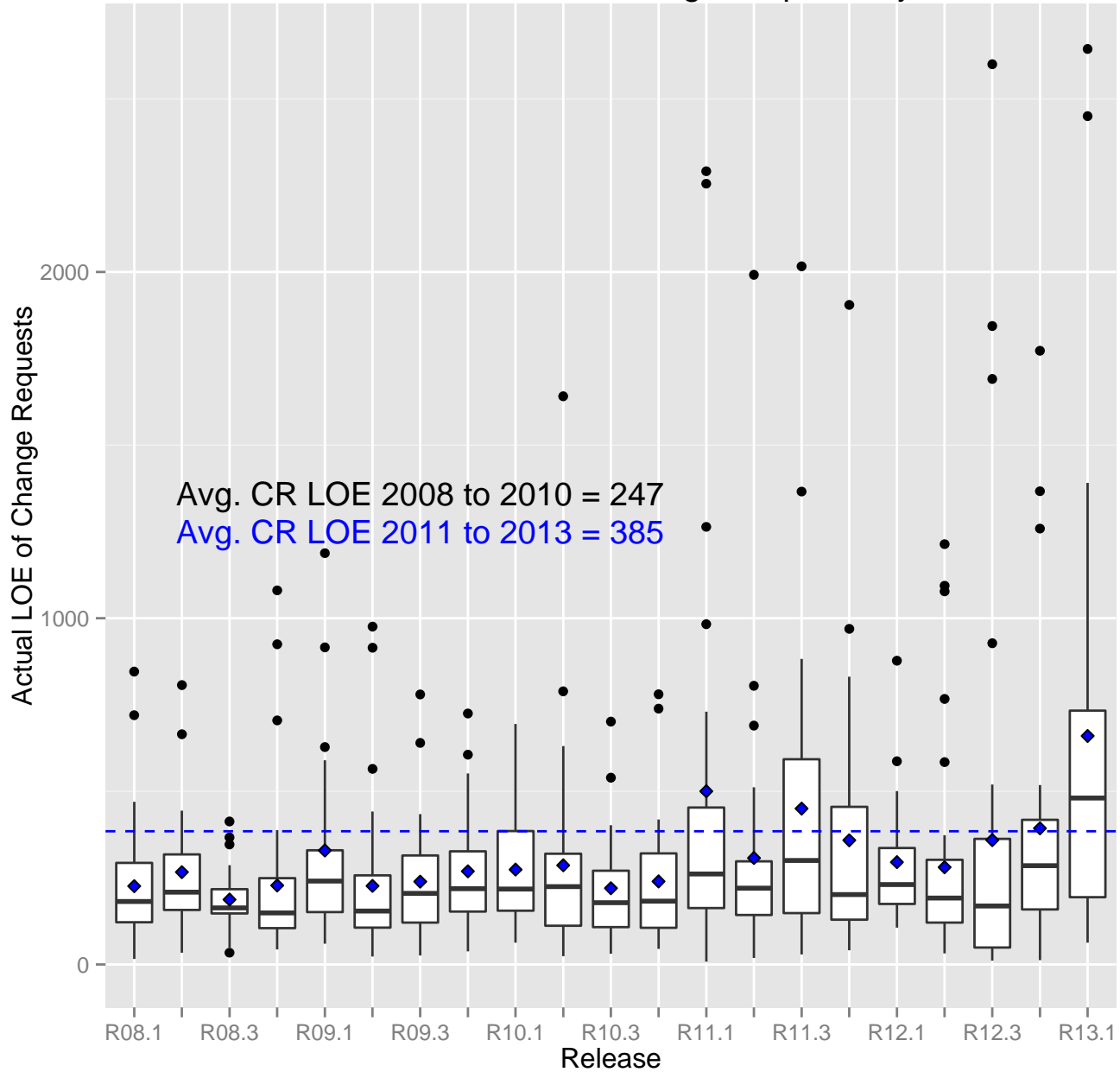


Histogram of Actual LOE of Change Requests



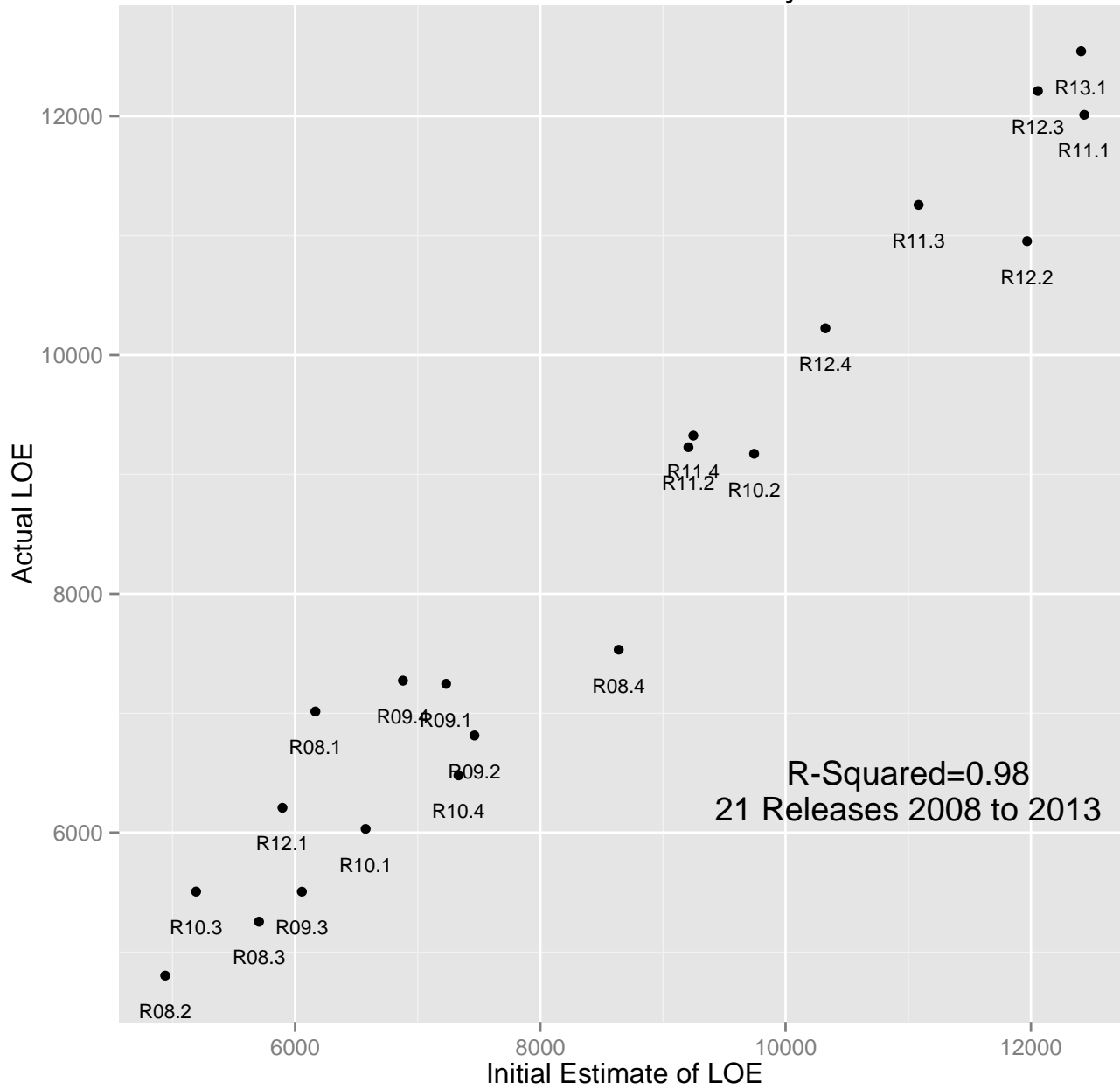


Distribution of Actual LOE of Change Requests by Release



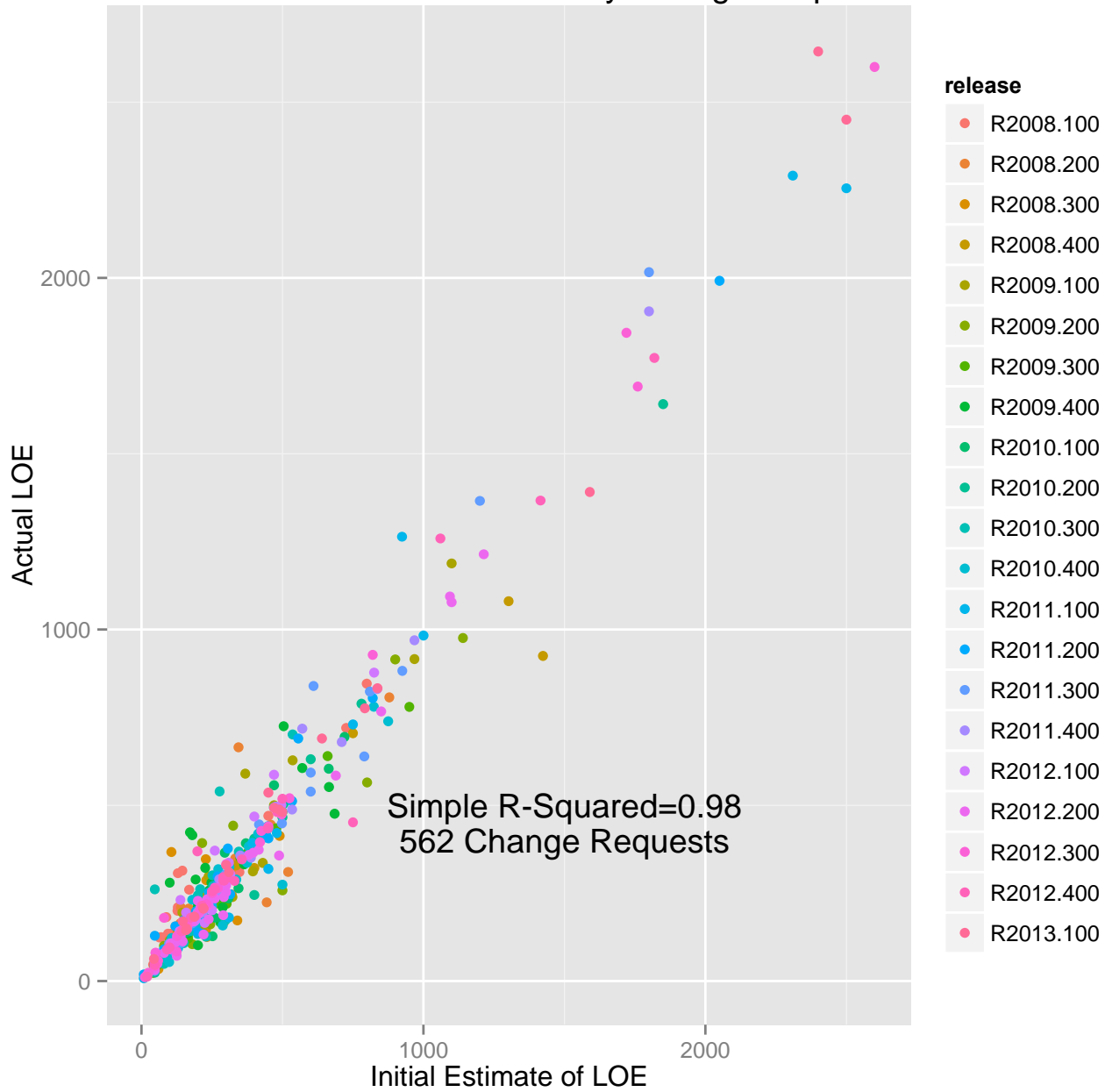


Actual LOE vs Initial Estimate by Release



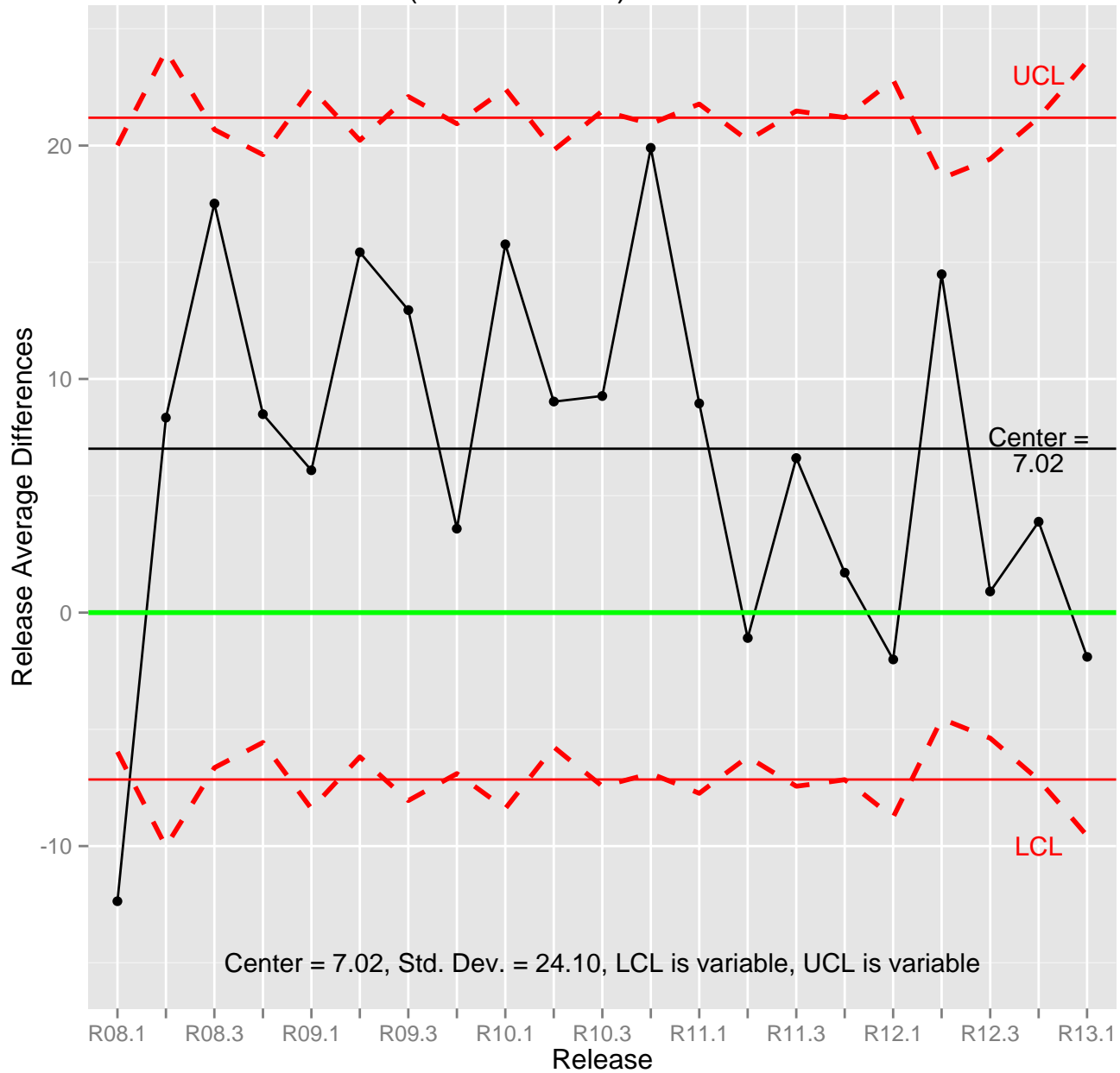


Actual LOE vs Initial Estimate by Change Request





X-Bar Chart for (Initial - Actual)/Actual Percent Differences





Findings

- The program team has repeatedly demonstrated its ability to accurately estimate LOE required to deliver a release and its individual change requests
- The size of releases has grown over time with a noticeable increase in size occurring from 2010 to 2011
- Even as the size of releases and change requests increased Acentia improved the accuracy of its estimates of LOE
- The estimation process is stable, which in turn assures consistency

- *Stability and consistency of our estimation process, as well as accuracy are of great importance to the program*
- *Having confidence in Acentia estimates enables the customer to assign resources to best effect*
- *Our team has been able to achieve stability and consistency through the processes and management tactics it has implemented*