



University of Southern California  
Center for Software Engineering

---

# Elaboration Cost Drivers Workshop

18<sup>th</sup> COCOMO / SCE Forum  
October 2003



## Attendees

- Brad Clark (moderator)
- Mauricio Aguiar
- Michael Douglas
- Samuel Eiferman
- Stuart Garrett
- Dan Ligett
- Vicki Love
- Karen Lum
- Karen Owens
- Dan Strickland
- Richard Stutkze
- Ye Yang (co-moderator)



# Approach

- Draw on the knowledge and experience of Affiliates in developing selection criteria that is pertinent and useful. Form a working group to electronically collaborate on elaborating COCOMO II Driver definitions
- Interim results presented at CSE Annual Research Reviews and COCOMO/SCM Forums.
- Steps:
  - ➔ – Rank the Drivers in terms of subjectivity
  - Considers different sources of elaboration
  - Develop a Whitebox analysis that considers a driver's influence on effort by lifecycle phase and activity.
  - Develop selection criteria based on the what others use and Whitebox analysis.
  - Pilot the enhanced selection criteria.



## Elaborating Cost Driver Workshop Goals

- No new math (elaboration not re-definition)
- No scare-factor (not too many inputs)
  - Something behind the curtain
  - Gradual unfolding
- More comprehensible vocabulary
  - Consider wider range of application users
  - Applicable to Business and Military
- Make it easier to use
  - Eye-ball average, optional weighted scoring
- Make it less subjective
  - Crisper definitions

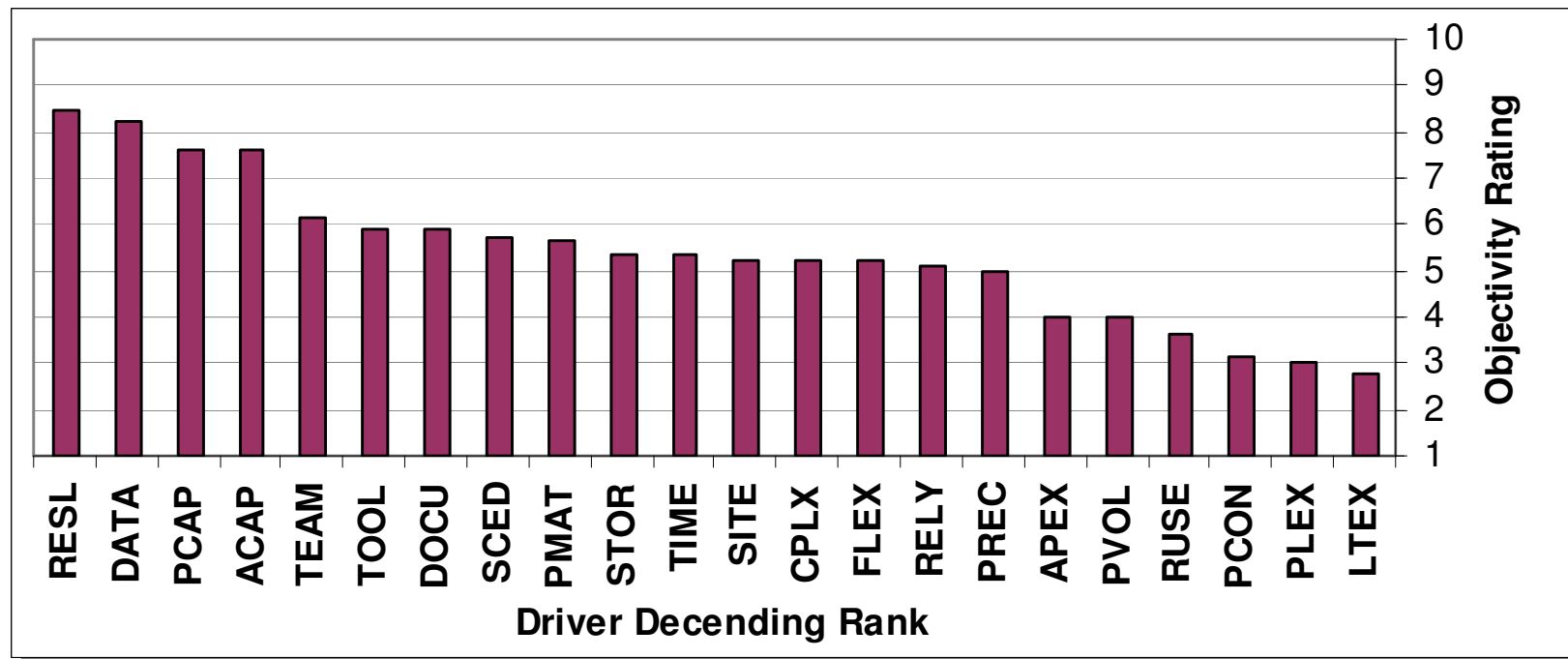


## Example of Discussion: Architecture and Risk Resolution (RESL)

- What does compatible mean in the “schedule, budget, and internal milestone through PDR or LCA compatible with...”
- If you use the model post-PDR, how do the questions apply?
- Percent of what schedule devoted to establishing architecture: PDR or CDR?
- What is a “top” architect and how to you quantify the percentage of availability?
- Suggestion: Add risk impact to the table using the definition of the 89 book, risk management.
- How much risk do you have?
- Do you have risk management processing place? Tracking tool?

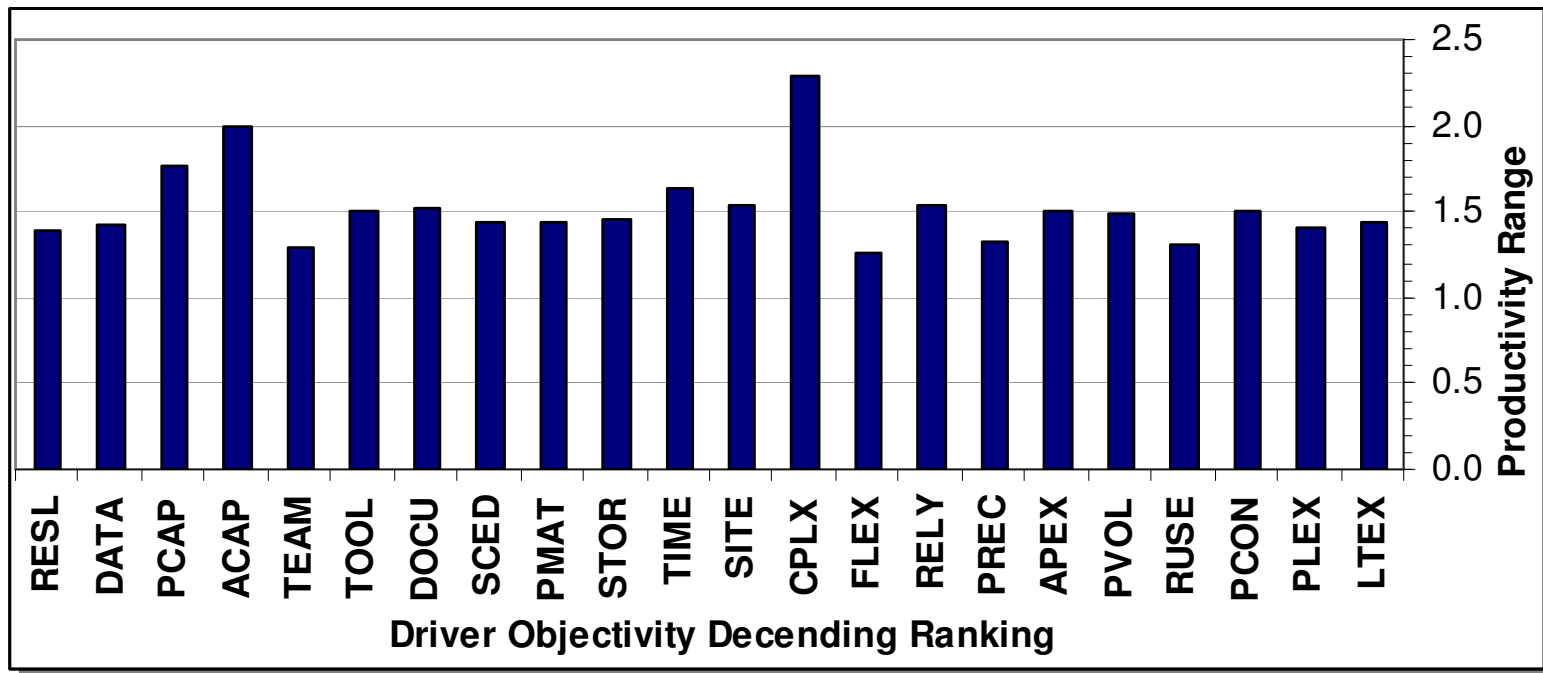
# Driver “Objectivity” Ranking

- Each driver was rated (1 to 10) for it’s level of subjectivity by participants.
- Ratings: 1 = Very Objective, 10 = Very Subjective



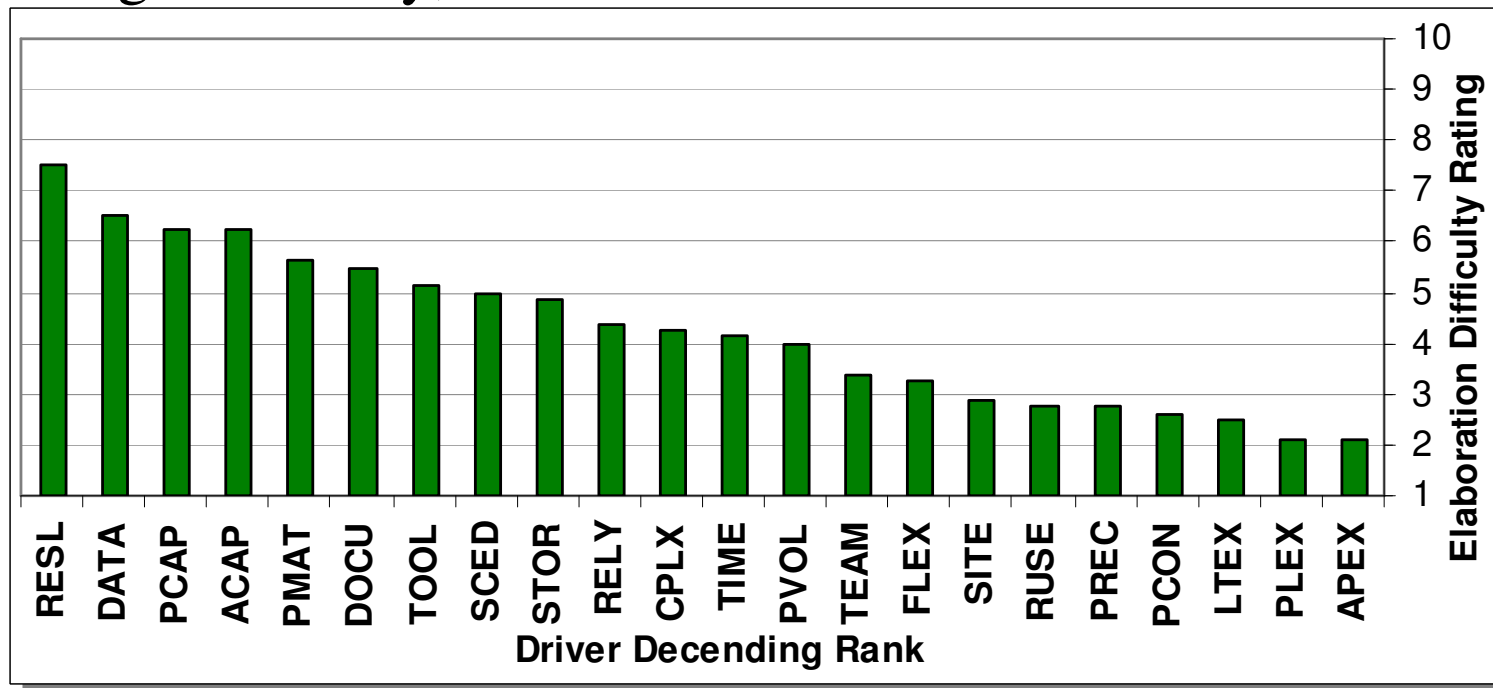
# Driver “Objectivity Ranking Compared to Driver Productivity Range

- This is the Productivity Range of each Driver
- Some high productivity drivers are in need of further elaboration



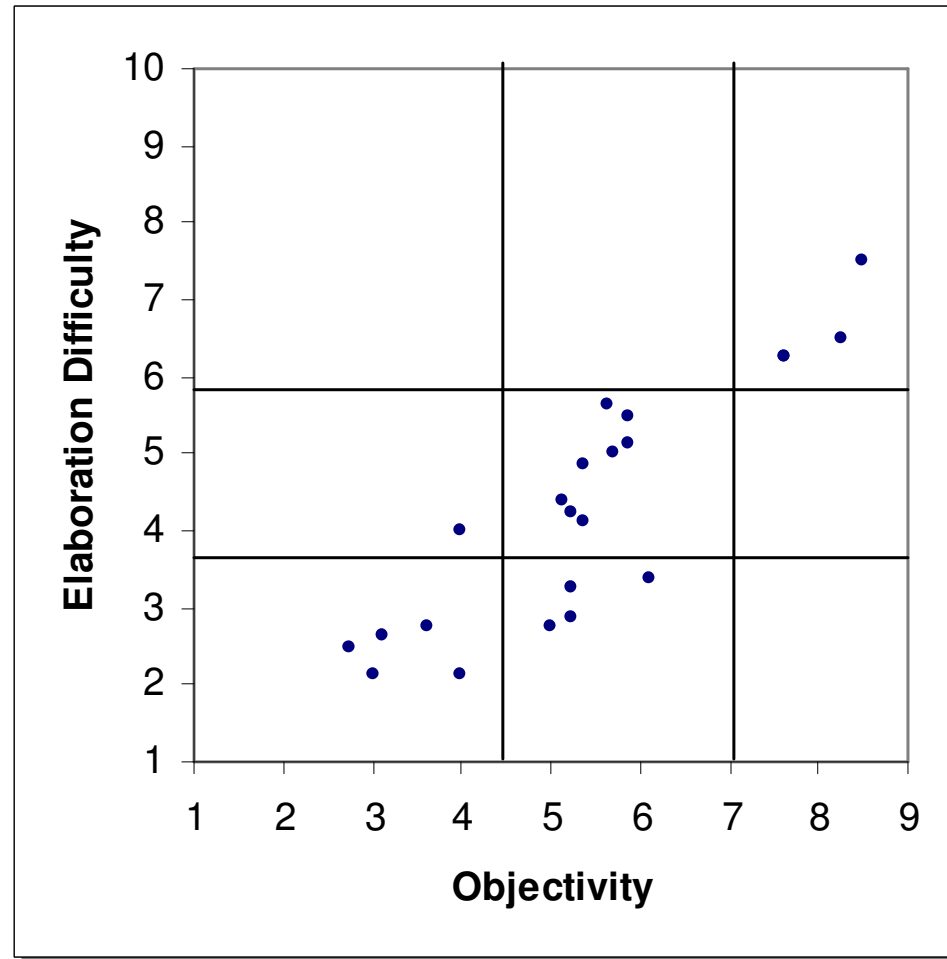
# Driver “Difficulty” Ranking

- Each driver was rated (1 to 10) for amount of work it would take to clarify the driver definition to make it more objective – Elaboration Difficulty.
- Ratings: 1 = Easy, 10 = Hard



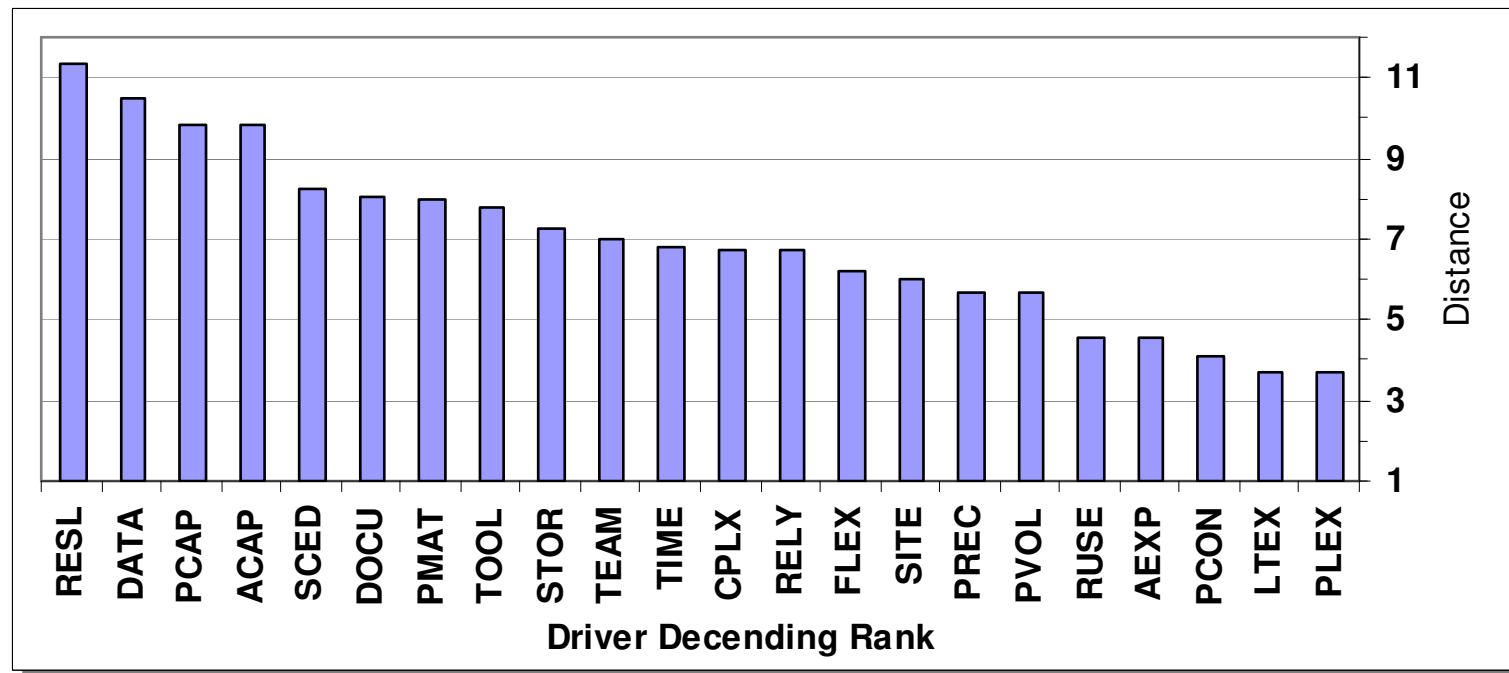
# Overall Driver Ranking Scatter Plot

- This plot combines the “Objectivity” and “Elaboration Difficulty” ranking information.
- Interestingly, there are no drivers that are very subjective and easy to correct.



# Overall Driver Rankings

- As can be seen in the scatter plot in the previous slide, each driver has a distance from the origin (1,1)
- This indicator shows the *distance* of each driver from the origin and thus its combined overall rank





## Next Steps

- Set-up website and e-mail list
- Populate website with artifacts and background materials
- Practice collaboration on one driver
  - Platform Experience (PEXP)
  - Use e-mail list
  - Post interim results to website for review
- Attempt to elaborate 4 or 5 drivers by CSE Annual Research Review in March 2004
  - 3 easy (PLEX, LTEX, PCON)
  - 2 difficult (RESL, DATA)



## Anticipated Results

- Improved likelihood that answers to COCOMO II Driver ratings are consistent within and across software development projects
  - Improve consistency of estimates
  - Provide a more understandable “basis of selection” for a driver rating
  - Impact quality of data collection for model calibration



# Driver Elaboration Study Moderators

(for more information, requests or questions)



Brad Clark  
Software Metrics, Inc.  
[brad@software-metrics.com](mailto:brad@software-metrics.com)

Ye Yang  
USC-CSE  
[yey@usc.edu](mailto:yey@usc.edu)