



Parametric Estimation for ERP Implementations

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Objectives

- Provide conference attendees with a practical method for estimating the project size of ERP implementations that is both easy to learn and apply
- Compare the behavior of ERP implementations to other business IT projects
 - Size vs. Schedule
 - Size vs. Effort

Outline

- Key differentiators between ERP implementations and software development
- Sizing ERP implementations
 - Determining size
 - RICEF objects
 - Configuration items
 - Normalizing to a common metric
- Estimating ERP implementations

Quotations

“Perfection is the enemy of the possible”

- Voltaire (paraphrased)

“Precision is not accuracy”

- William Horton

Key Differentiators

- Software projects create code
 - Develop new systems
 - Modify existing systems
 - Are measured (sized) by the functionality they deliver and/or the code they create
- Software projects *may*
 - Develop interfaces
 - Have hardware, network, telecom components
 - Convert data
 - Have system setup and configuration

Key Differentiators

- ERP Implementations *have*
 - Significant system setup & configuration
 - Hardware, network, & telecom components
- ERP Implementations *may*
 - Develop interfaces
 - Convert data
 - Create additional functionality
 - Modify existing functionality

Determining Size

- Software project size is **not** how much it costs nor how long it takes
- Size measures the functionality a software project delivers
- Parametric estimation (SLIM, COCOMO, etc.) uses size as a key input to determine cost and schedule
 - Lines of code, function points, requirements, use cases are traditional size measures
- What size measures capture the functionality of an ERP implementation?

Sizing ERP Implementations

- ERP Implementation size: two components
 - Configurations
 - Customizations
- Configurations include parameters, properties, rules, values, table setup
- Customizations are principally code
- Proportions vary between projects
- ERP sizing must consider both

Configurations

- Estimate the number of configuration items (by category & complexity)
 - Best case, worst case, most likely scenarios
- Alternatively, identify number of high level business processes that must be configured
 - SAP Solution Composer is an example
- Normalize them to a common elementary unit (using gearing factors)

Configuration Example: Tables

- Average table has
 - 3 indices to define
 - 20 columns to define
 - 20 data types (one per column)
- Average table (in this example) requires 43 elementary activities (or implementation units) to create
 - Gearing factor of 43

Customizations

- RICEF objects: **R**eports, **I**nterfaces, **C**onversions, **E**nhancements, **F**orms
- Estimate counts of each item (by complexity)
- Normalize them to a common elementary unit (using gearing factors)
- Add to normalized configuration items count for an estimated project size

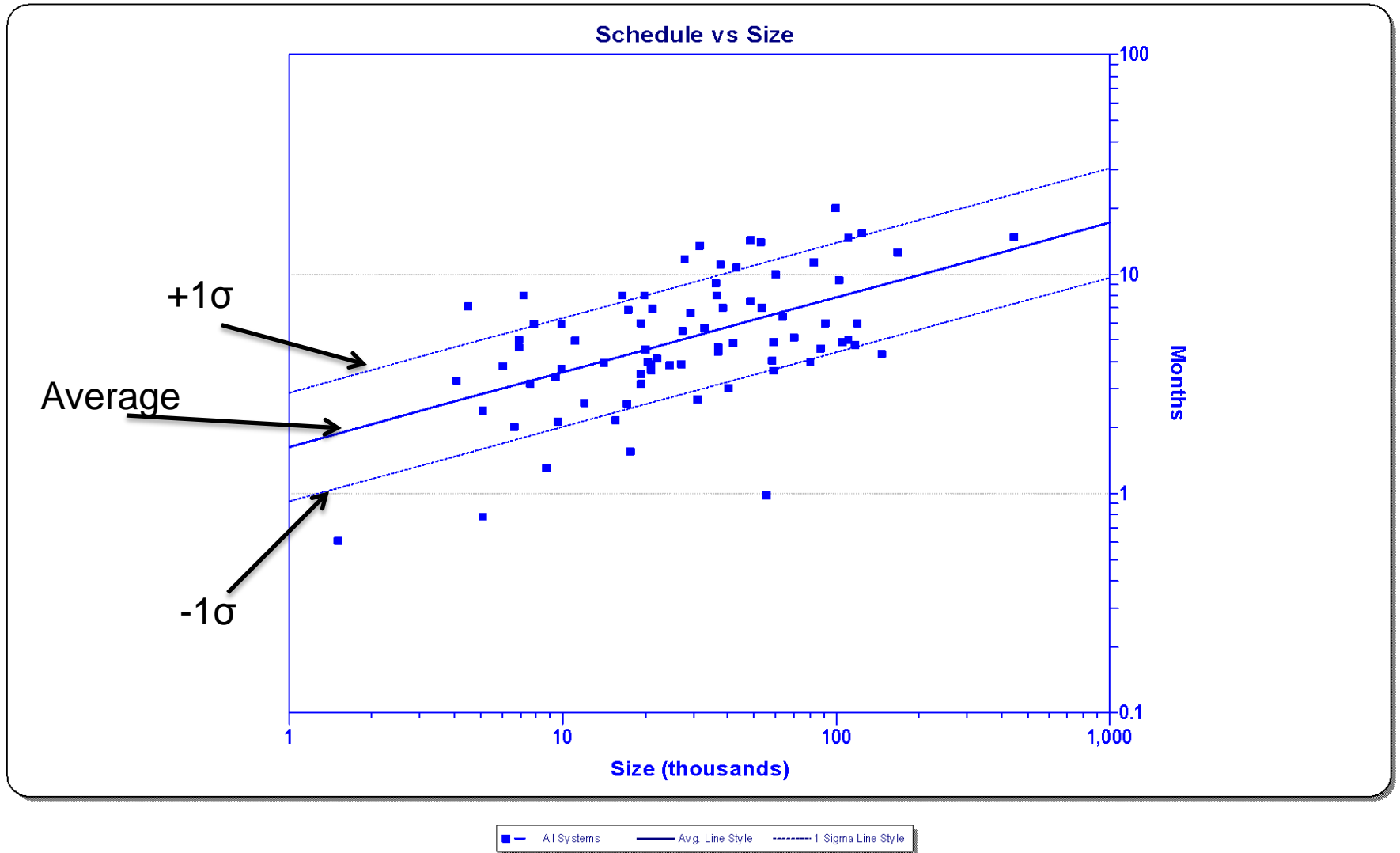
Sample Gearing Factor Table: RICEF Objects

Component	Gearing Factor	Number	Size
Simple Reports	100	10	1000
Average Reports	200	5	1000
Complex Reports	300	20	6000
Simple Interfaces	320	2	640
Average Interfaces	620	12	7440
Complex Interfaces	1520	1	1520
Simple Conversion	100	2	200
Average Conversions	200	5	1000
Complex Conversions	300	2	600
Simple Enhancements	100	2	200
Average Enhancements	500	1	500
Complex Enhancements	1000	3	3000
Simple Forms	100	2	200
Average Forms	200	15	3000
Complex Forms	300	3	900
		Total	27,200

But, Does it Work?

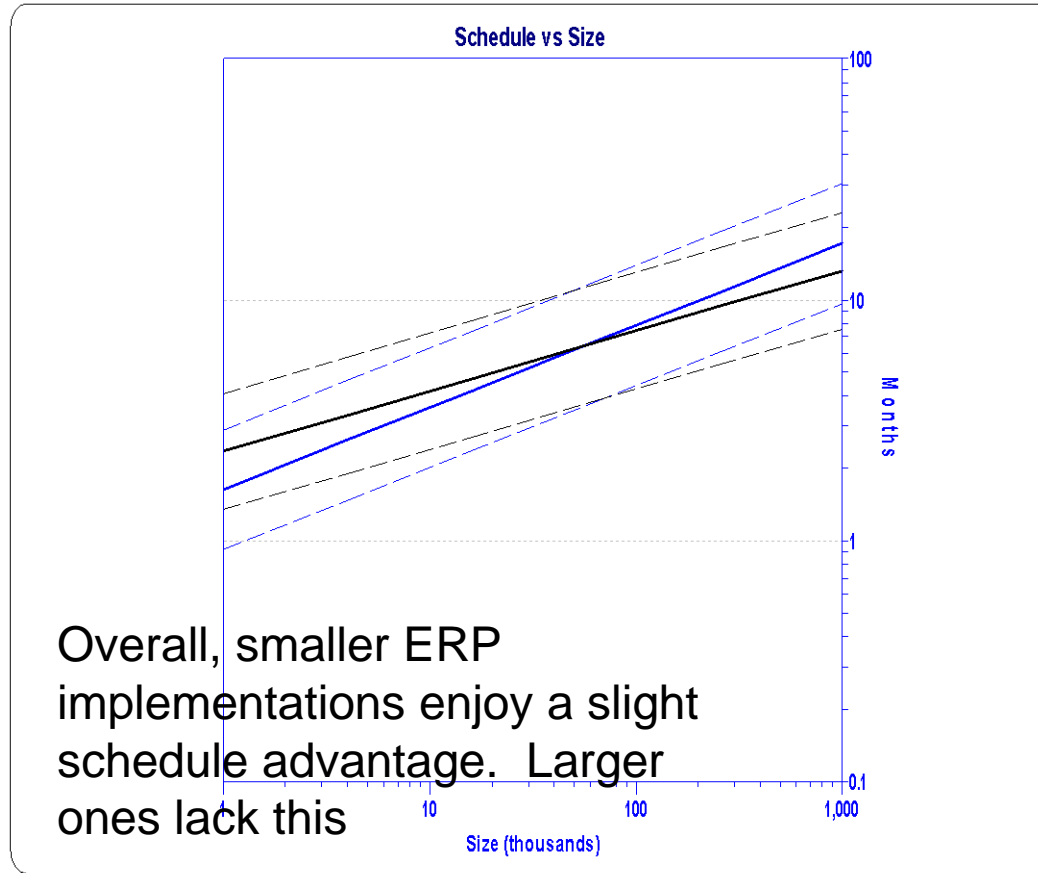
- Step 1: Size completed ERP implementations using configuration items and RICEF objects
- Step 2: Compare trends for Effort, Schedule, Staffing, and Productivity to trends for Business IT projects (non-ERP)

Schedule



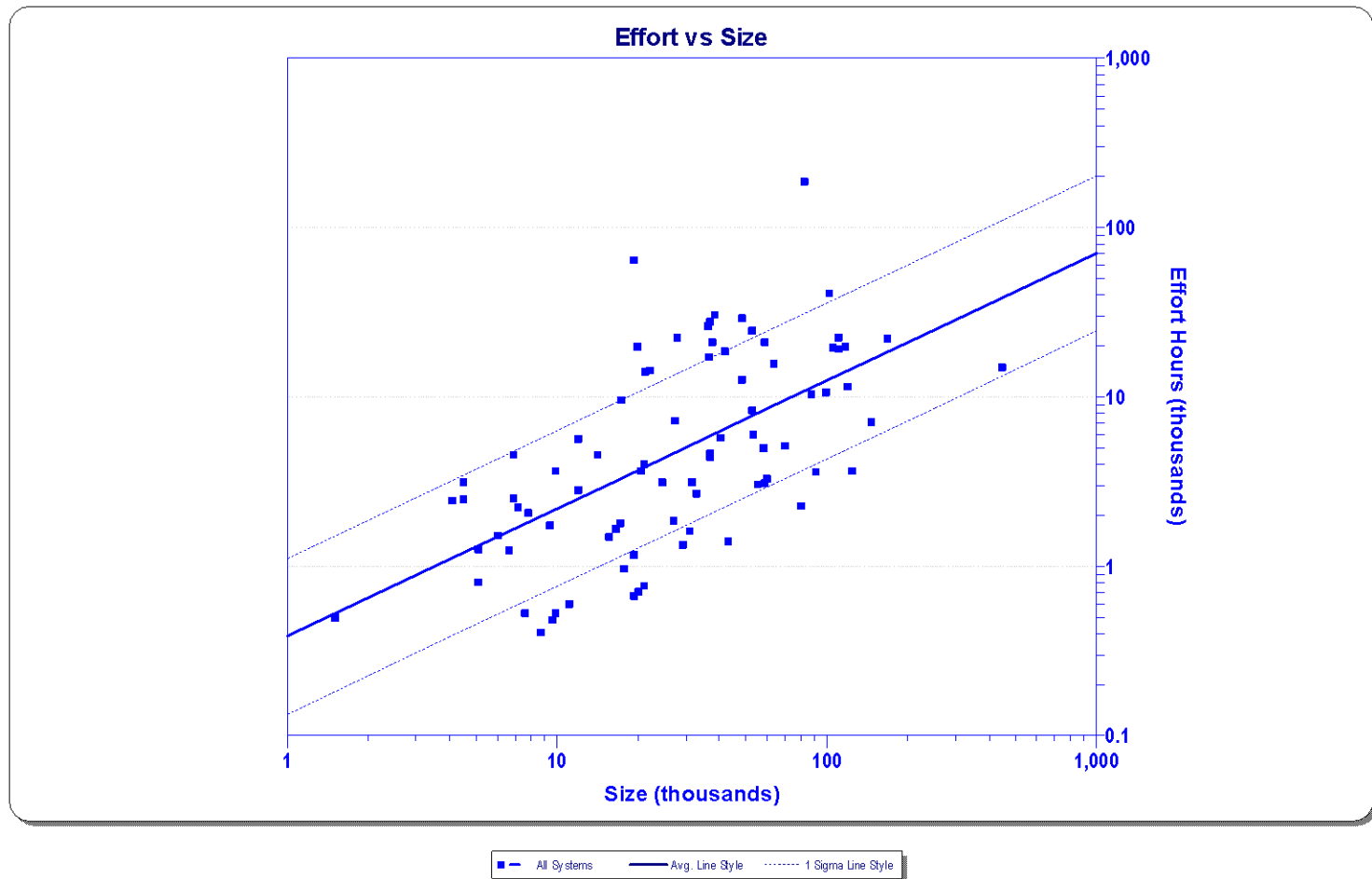
Schedule

Blue lines are trends for ERP implementations
Black lines for Business IT projects



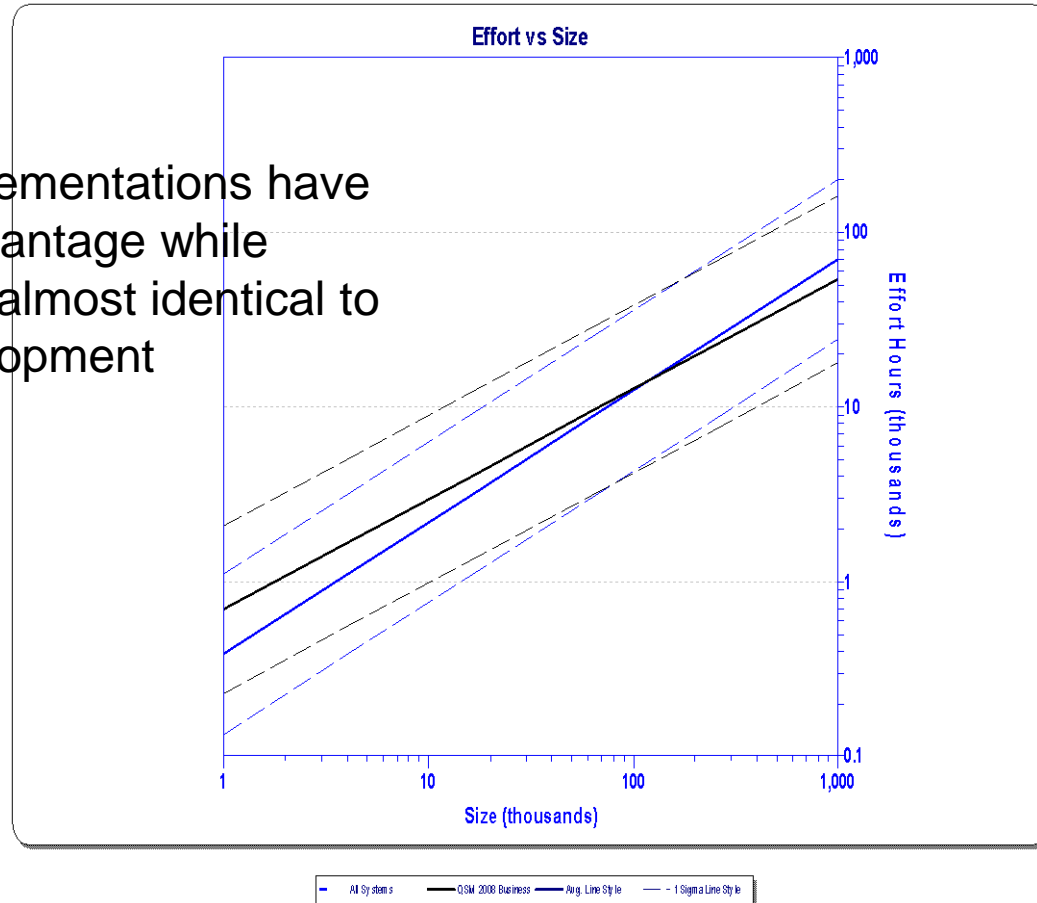
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Effort

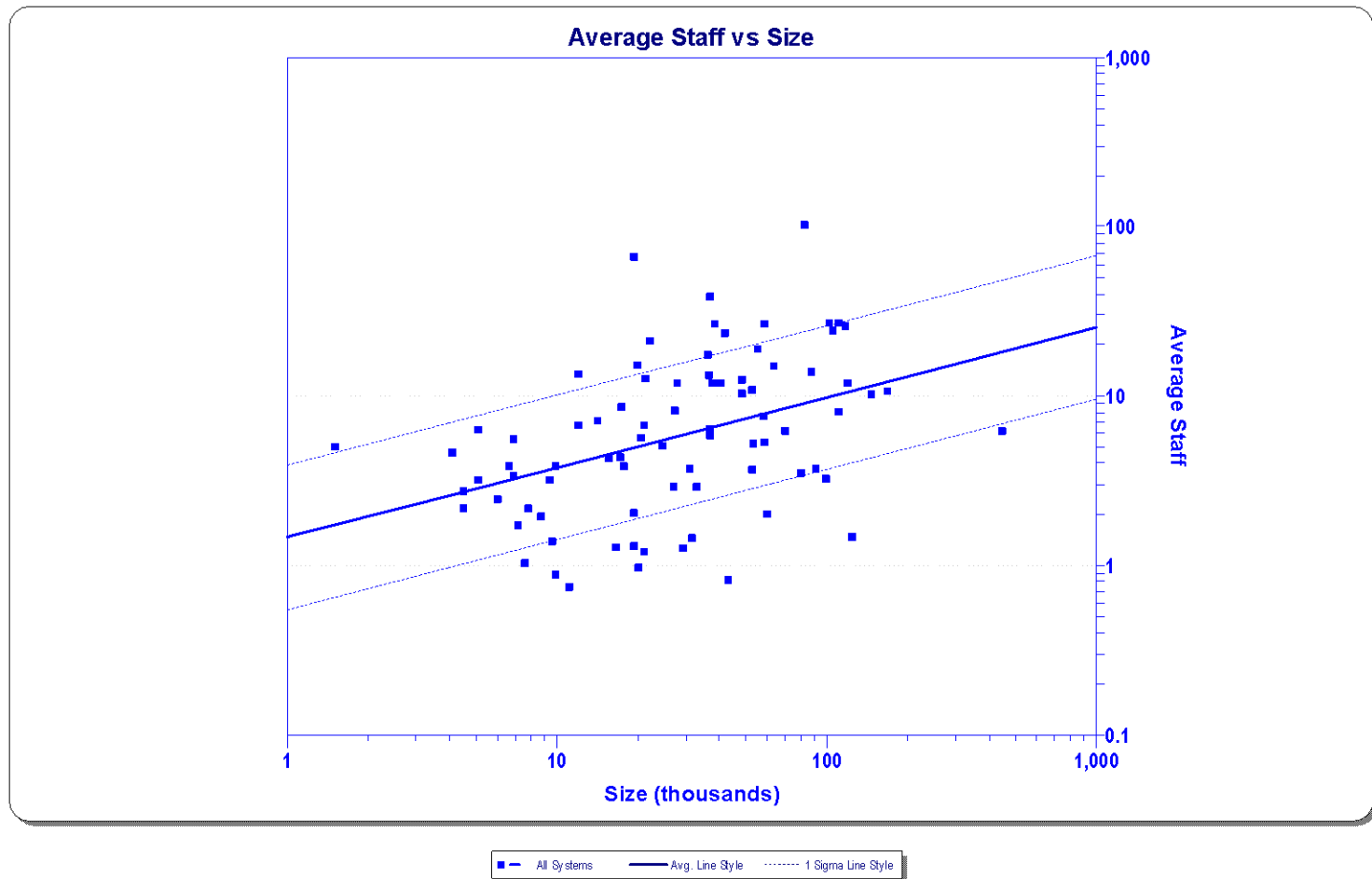


Effort

Small ERP implementations have a cost/effort advantage while larger ones are almost identical to traditional development

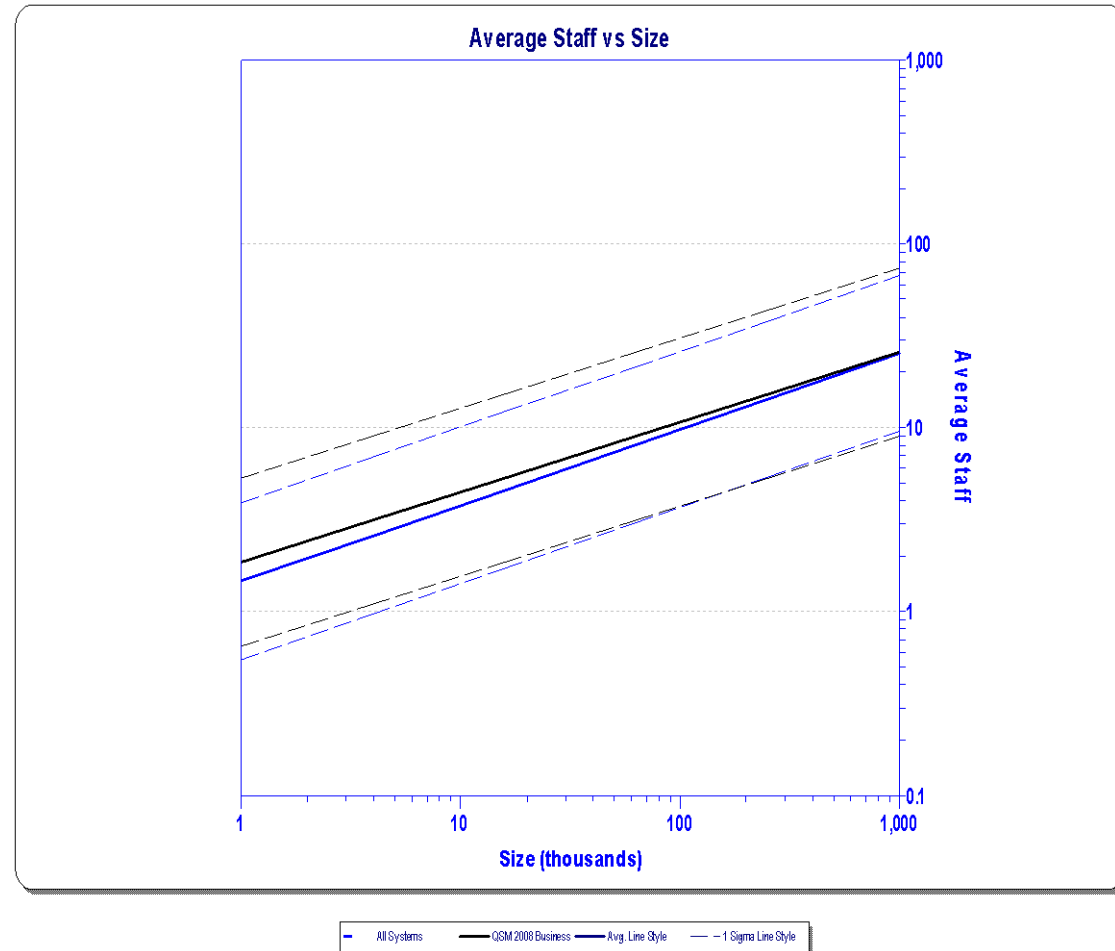


Average Staff

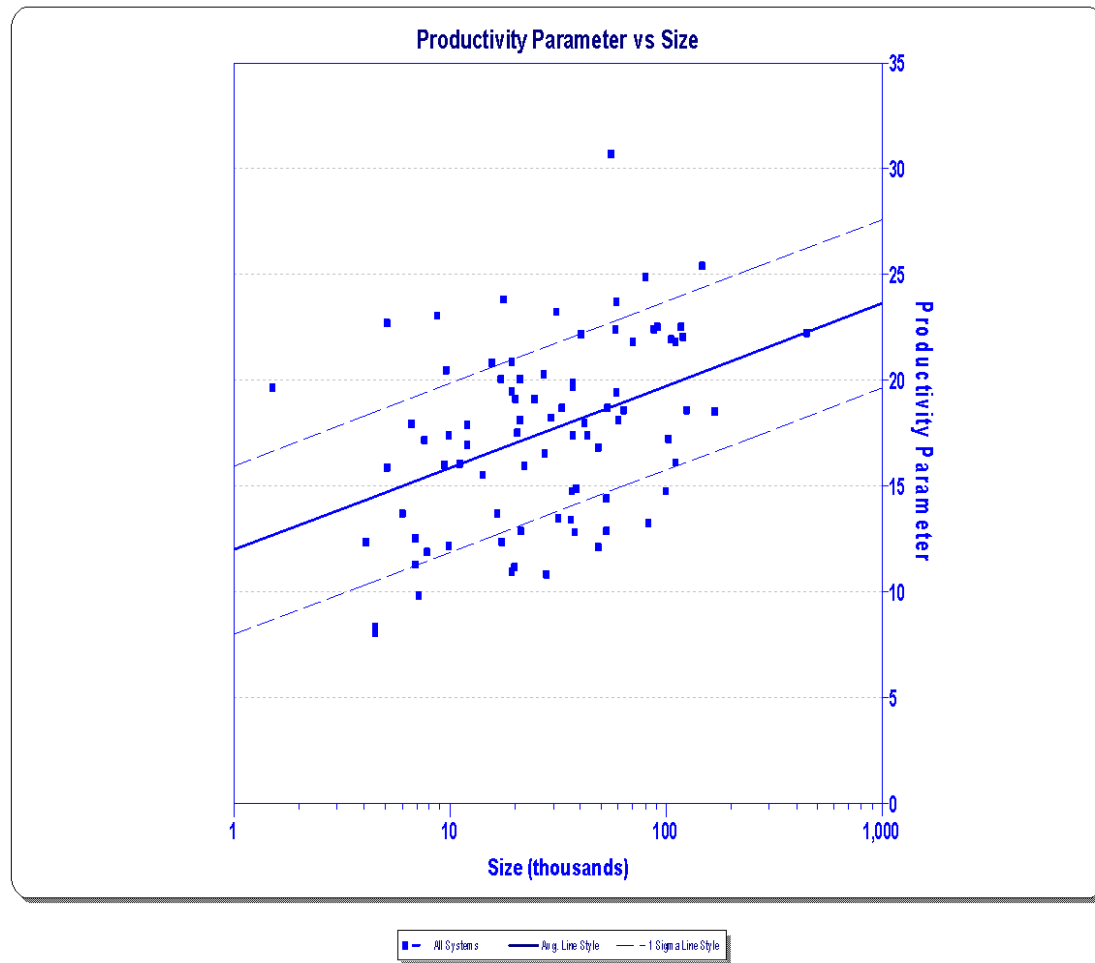


Average Staff

ERP implementations use slightly smaller teams for most projects although the trends and the amount of variability are very similar

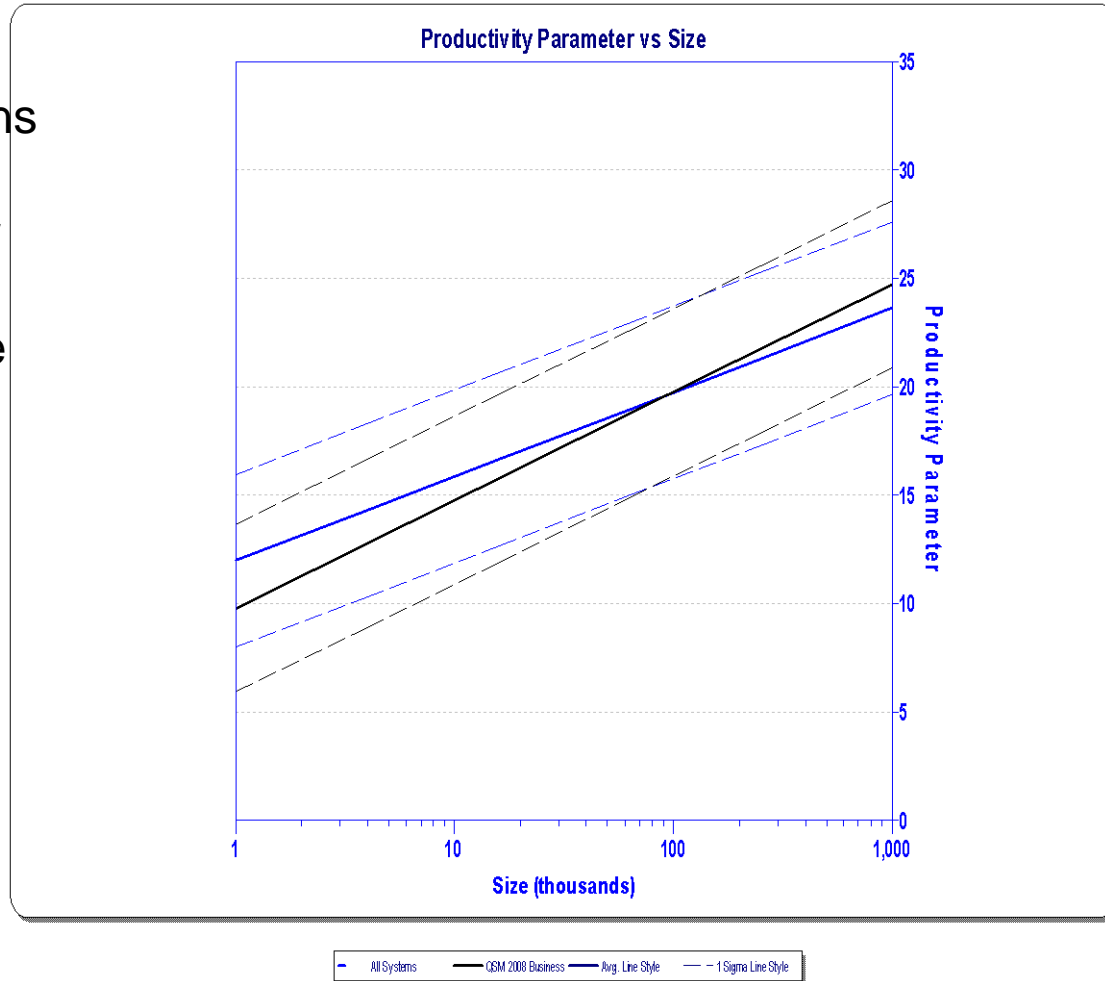


Productivity Parameter



Productivity Parameter

ERP Implementations are more productive than Business IT for smaller projects but lose their advantage as size grows



Conclusions

- ERP Implementations have very similar behavior to other Business IT projects
 - Schedule, effort, staffing, productivity
- Parametric estimation techniques used for Business IT projects are applicable to ERP implementations
- ERP Implementation size can be effectively estimated using Configuration Items and RICEF Objects
 - Widely used by U.S. government for estimation and tracking

Conclusions

- Although smaller ERP implementation projects are slightly more productive than traditional Business IT, the cost of the package should be included in cost estimates if it is being purchased
- While larger ERP implementations do not enjoy cost or schedule advantages, larger traditional Business IT projects have a higher probability of failure, which must also be considered when choosing an alternative

Questions?