



**The Intelligence behind
Successful Software Projects**

Sizing and Estimating 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
 - 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

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
- 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



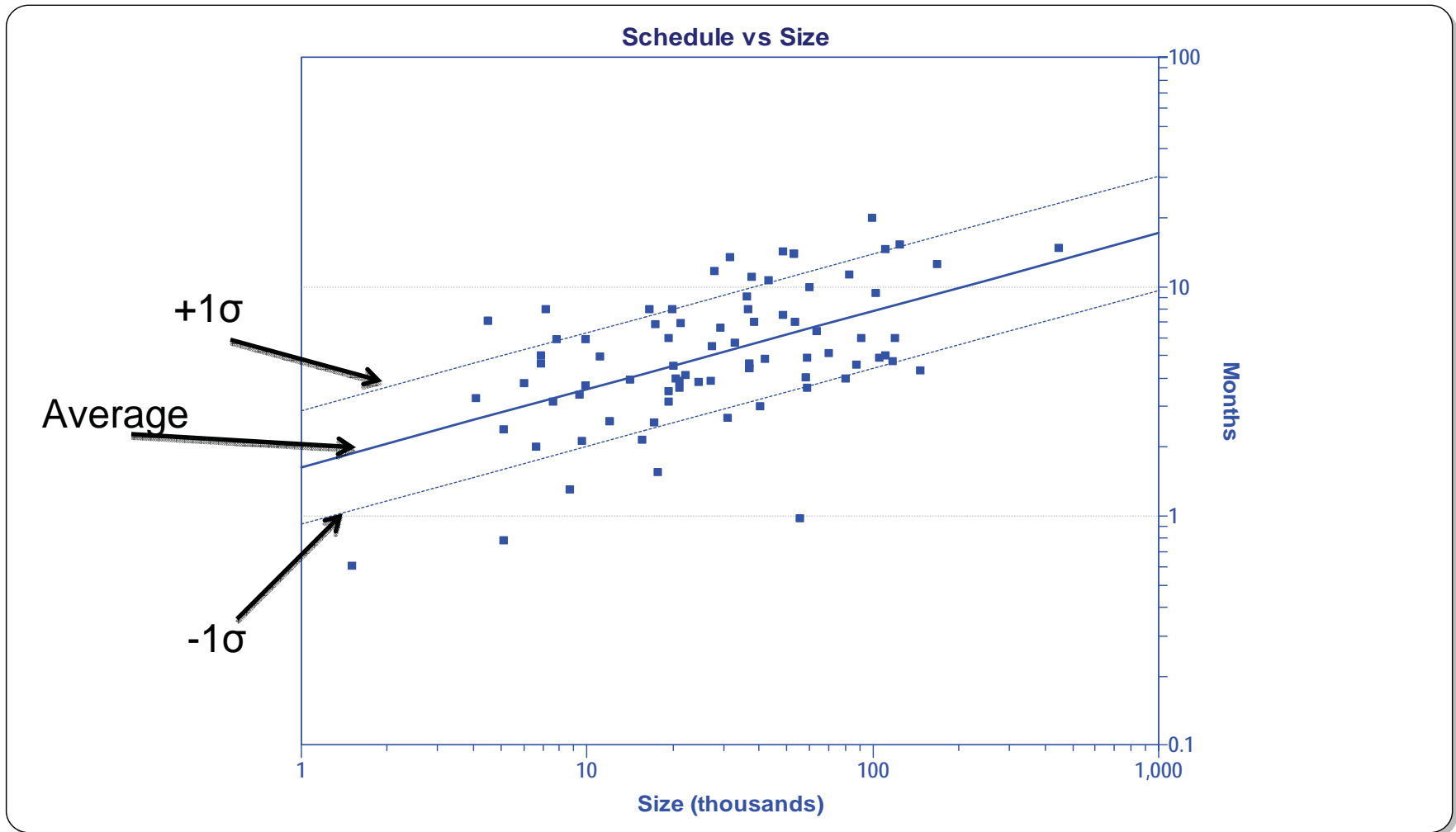
Component	Gearing Factor	Number	Size
Simple Reports	100	10	1000
Average Reports	200	5	1000
Complex Reports	300	20	6000
Simple Interfaces	320	2	640
Average Interfaces	620	12	7440
Complex Interfaces	1520	1	1520
Simple Conversion	100	2	200
Average Conversions	200	5	1000
Complex Conversions	300	2	600
Simple 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?



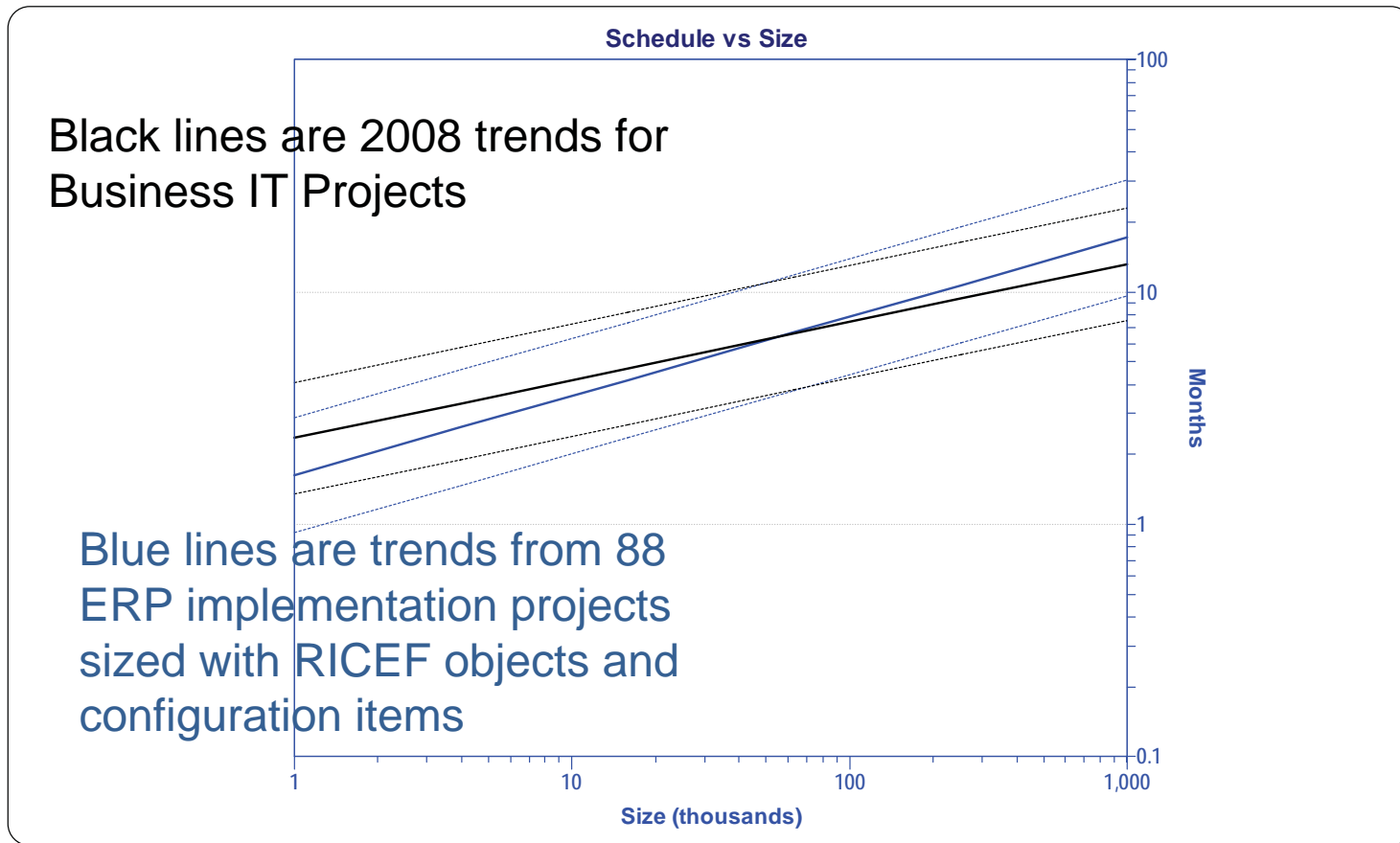
- Step 1: Size completed ERP implementations using configuration items and RICEF objects
- Step 2: Compare trends for Effort, Schedule, Staffing, and Productivity to trends for Business IT projects (non-ERP)

Schedule



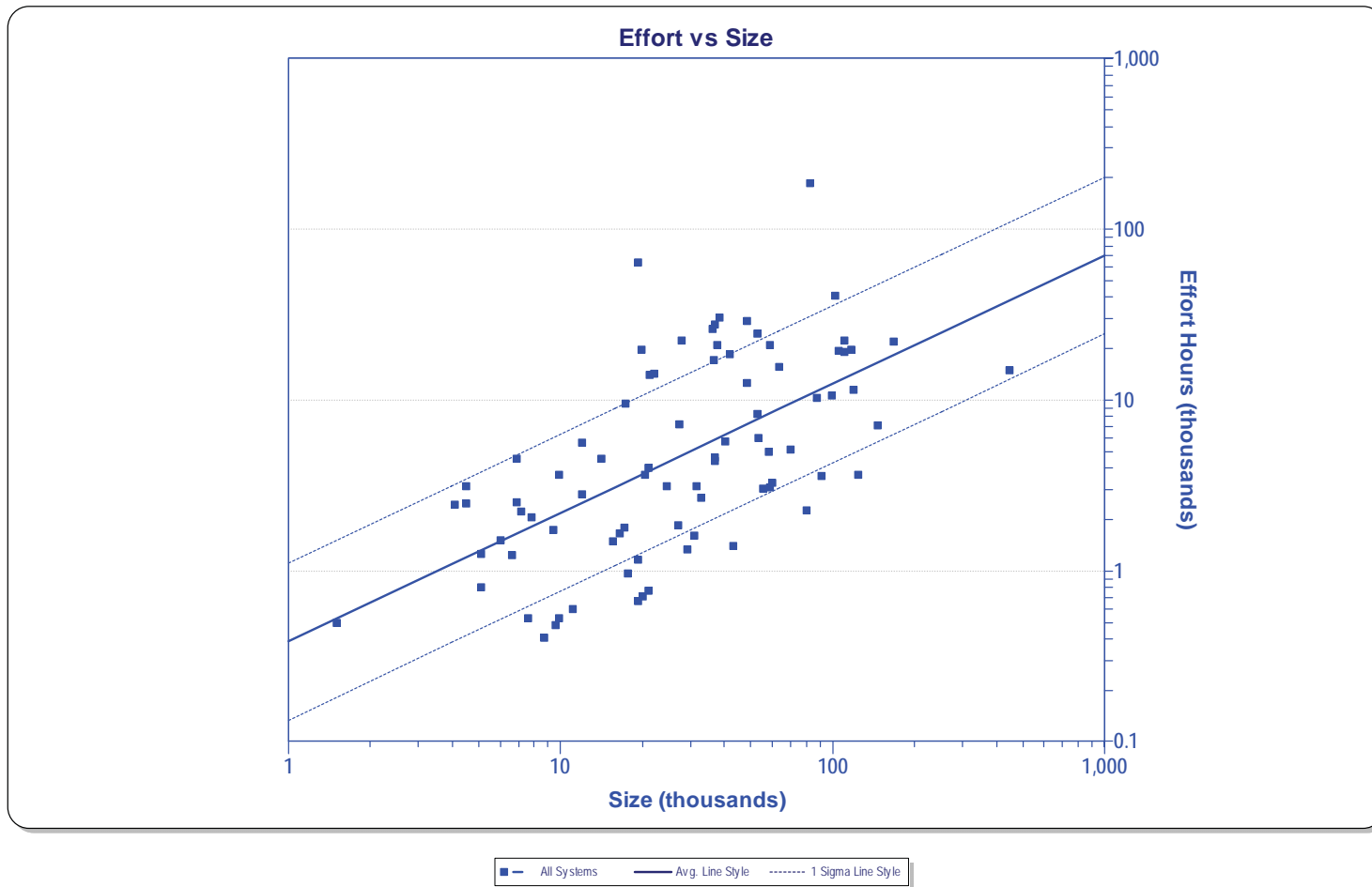
■ All Systems — Avg. Line Style - - - - - 1 Sigma Line Style

Schedule

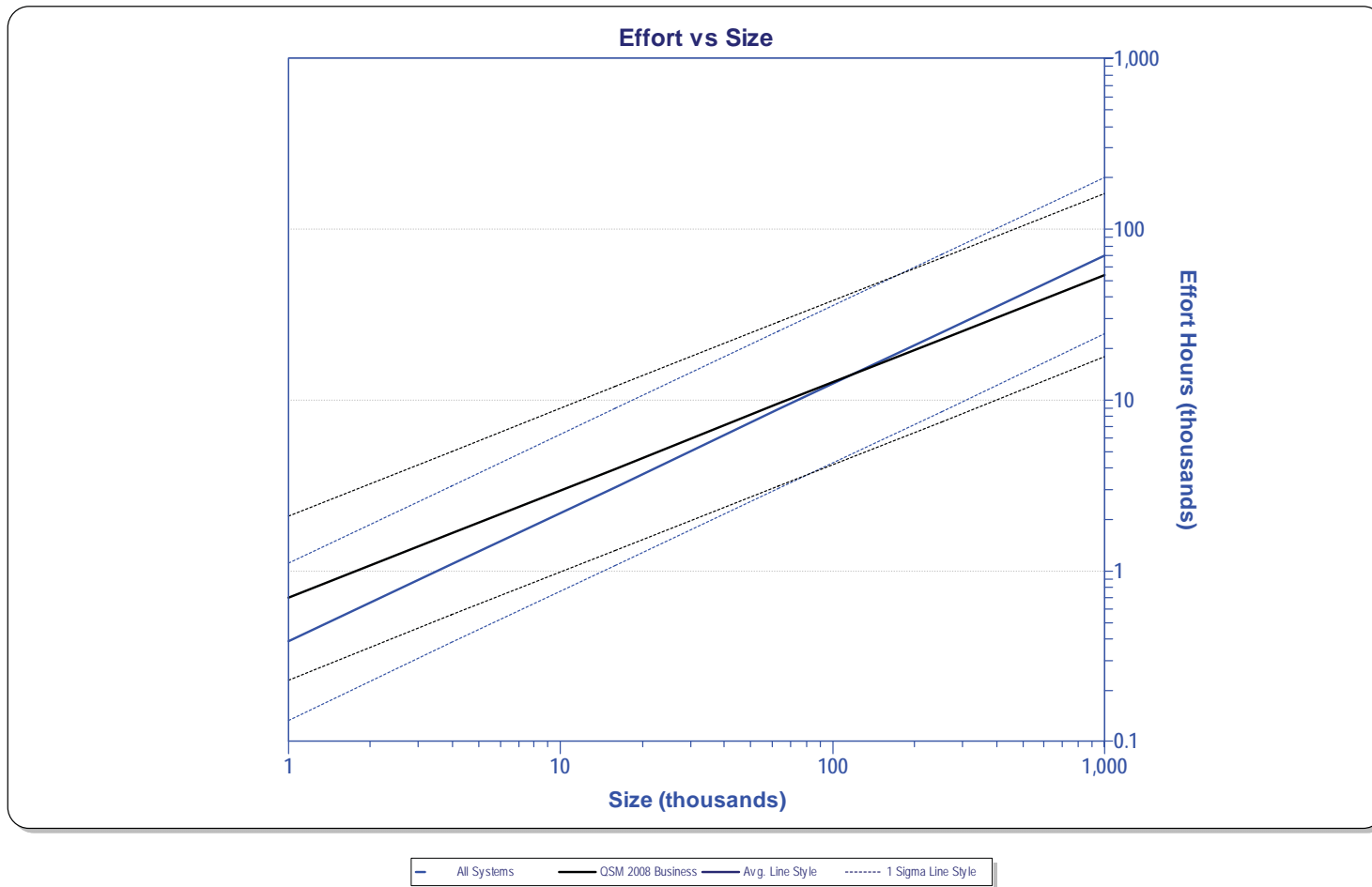


— All Systems — QSM 2008 Business — Avg. Line Style 1 Sigma Line Style

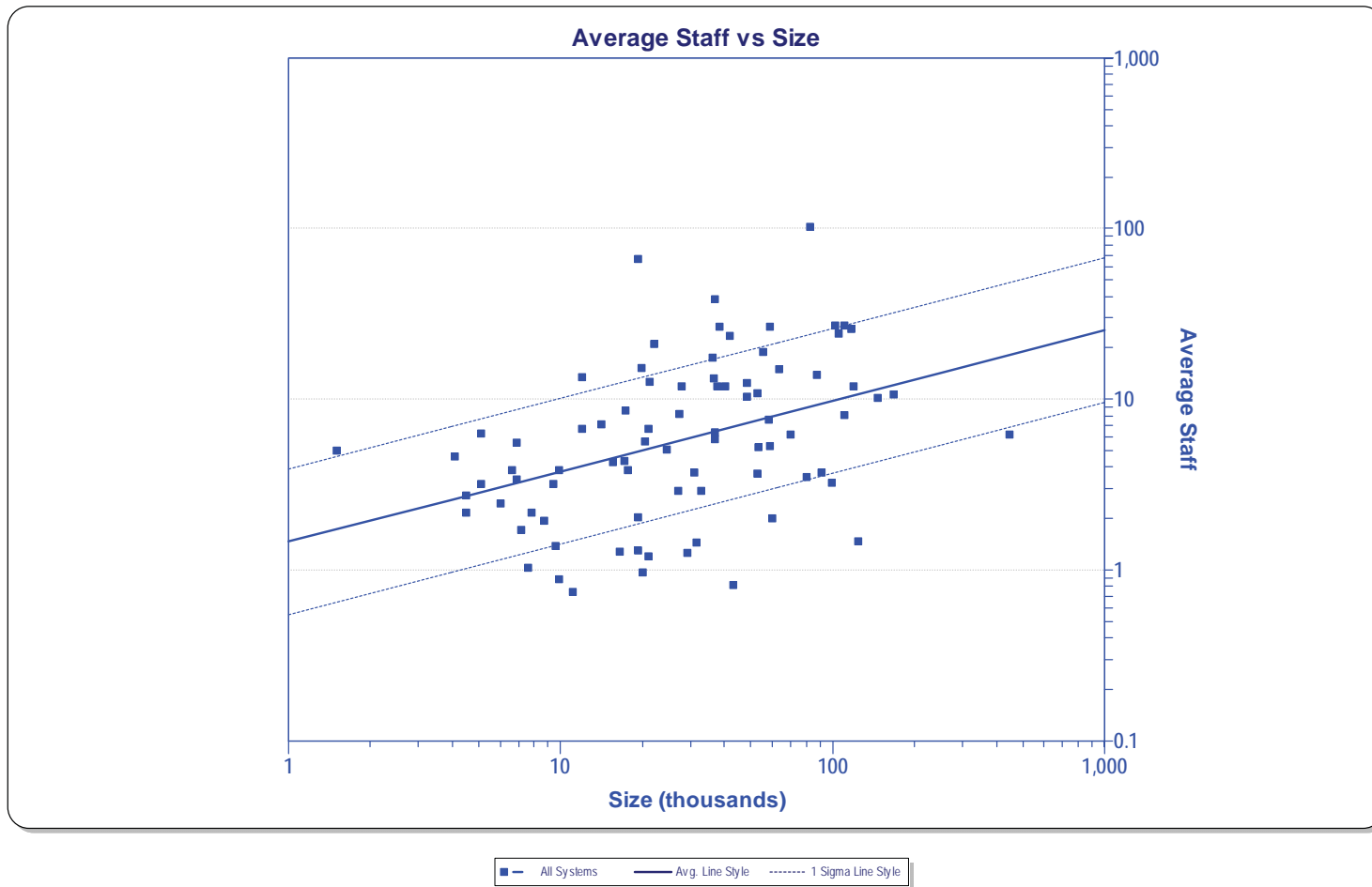
Effort



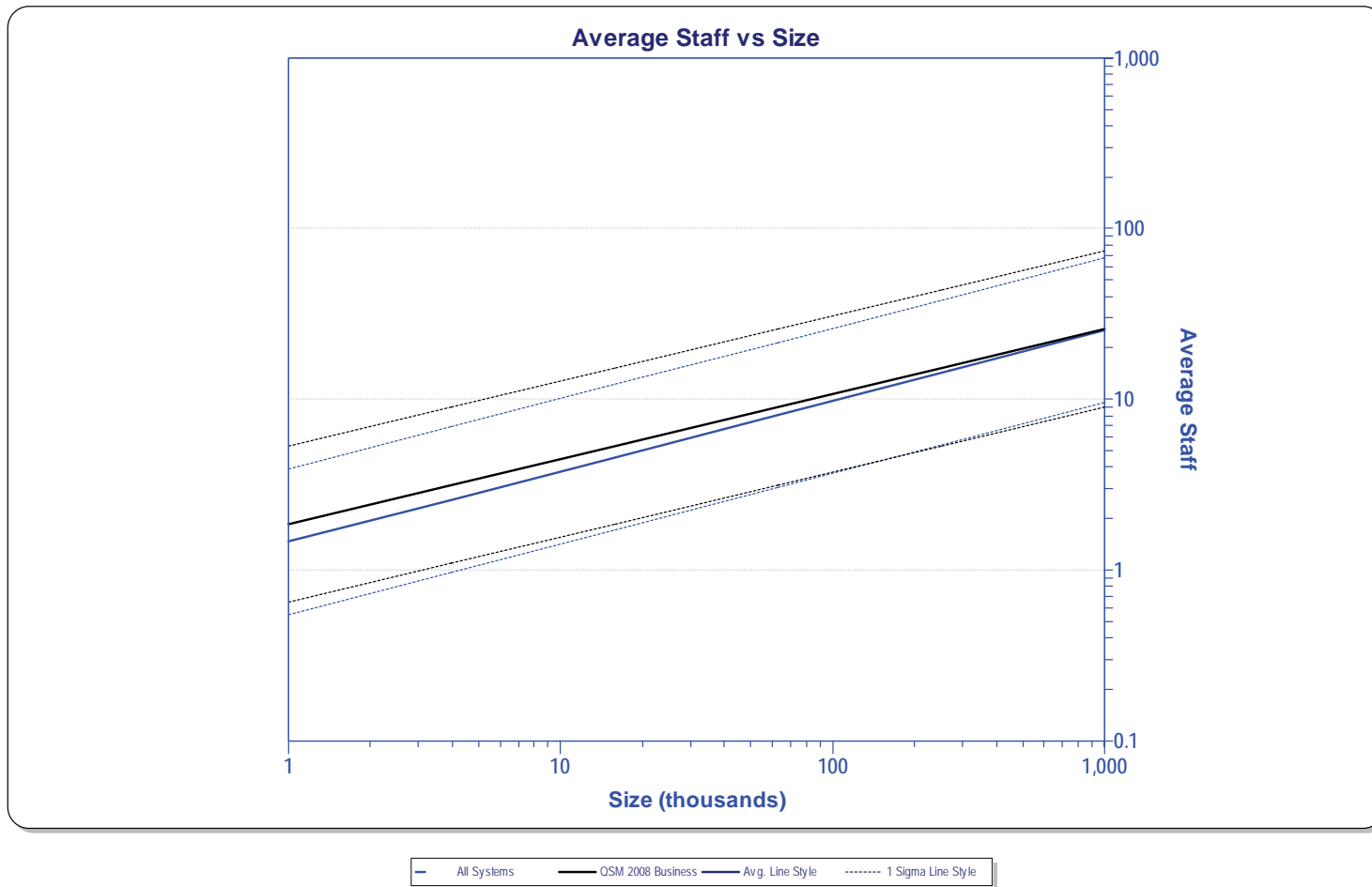
Effort



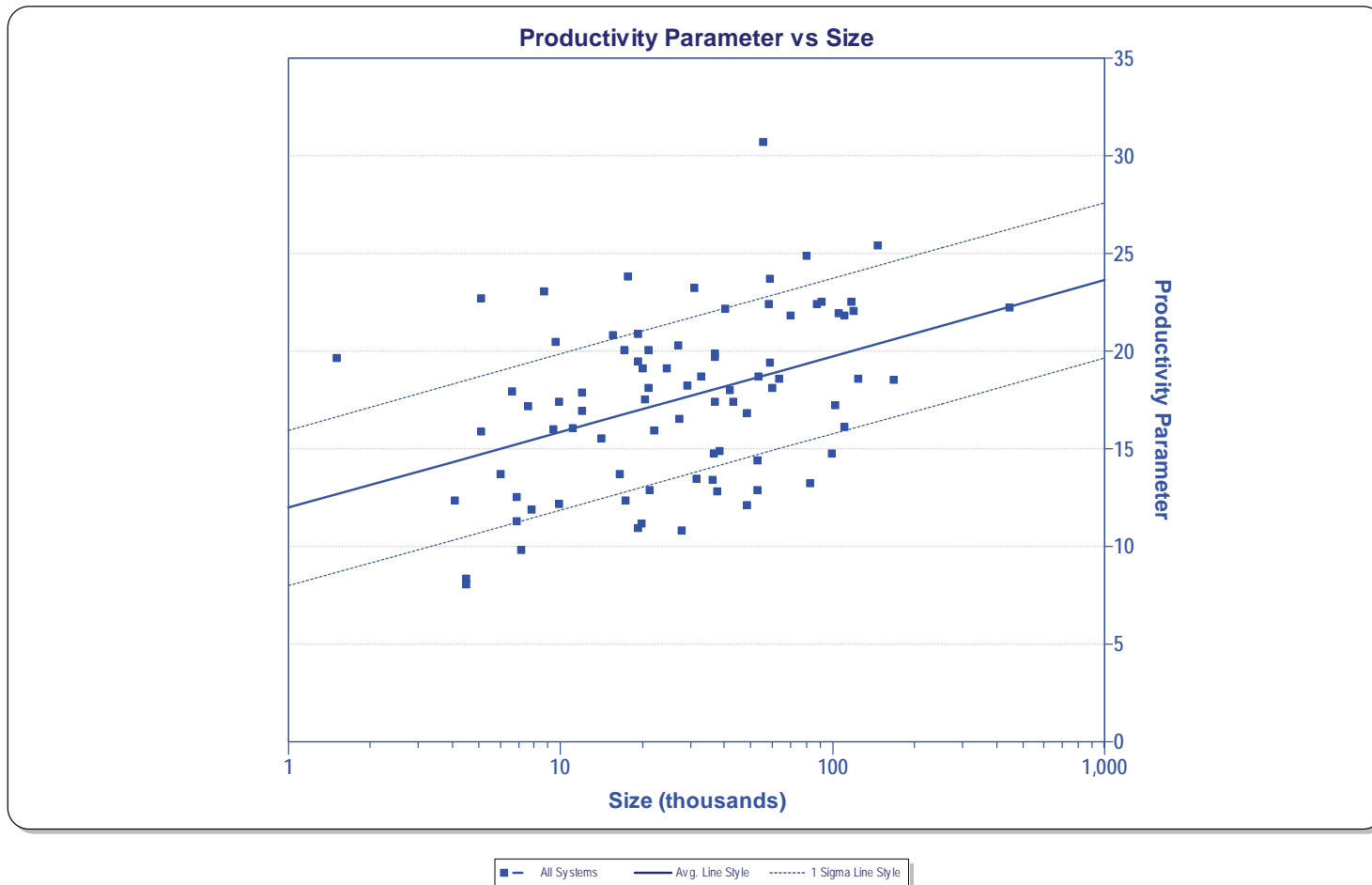
Average Staff



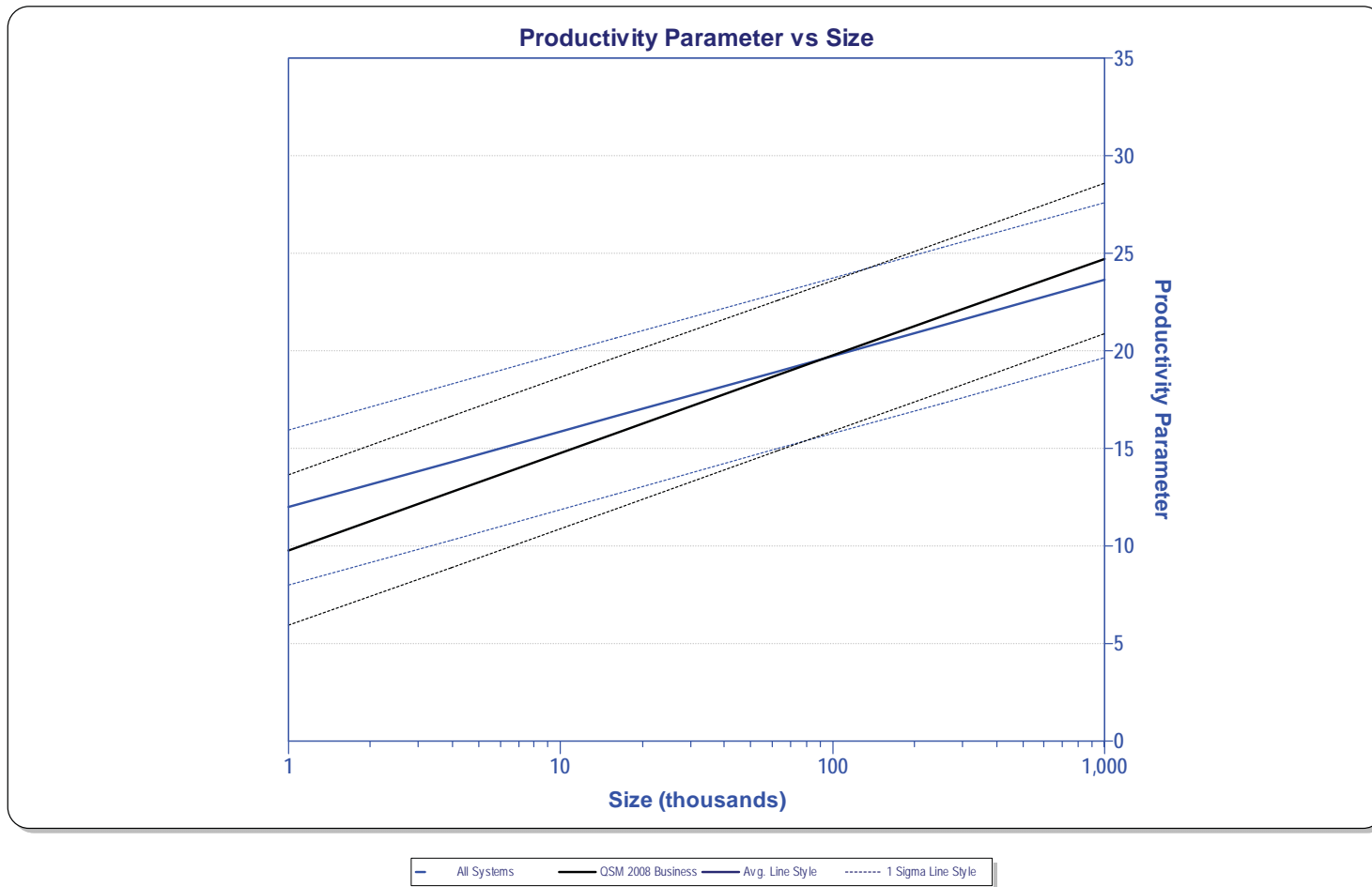
Average Staff



Productivity Parameter



Productivity Parameter



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

ERP Estimation Demo



- Estimate project size
- Create Baseline estimate
- Model with schedule & effort constraints



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Questions?