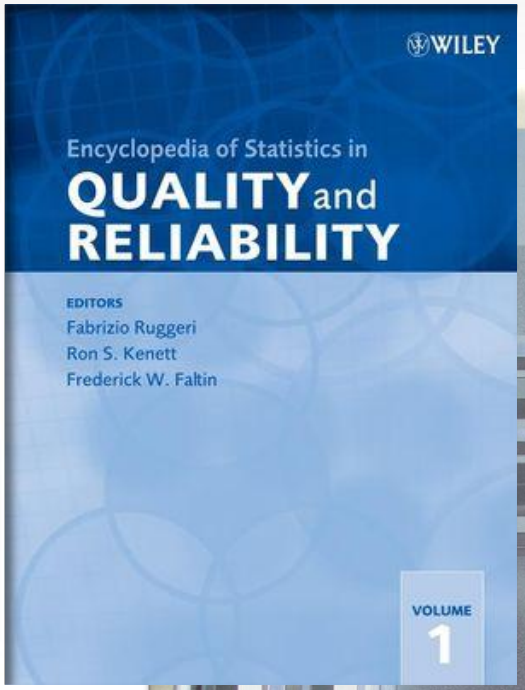
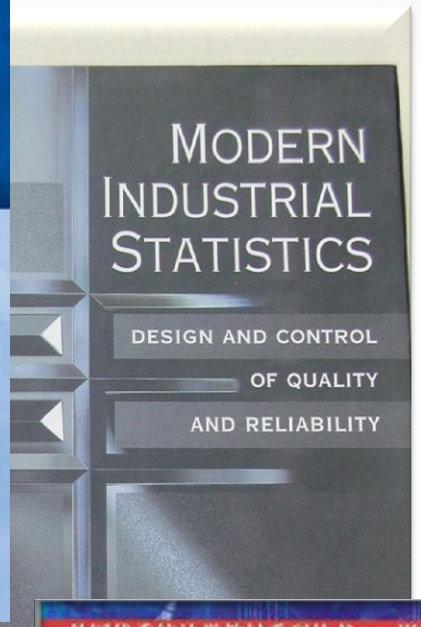
על תפקיד חשיבה סטטיסטית בעתיד האיכות

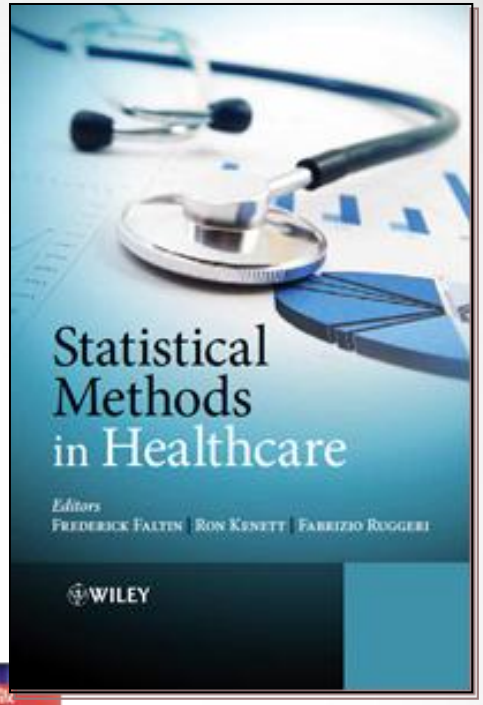
פרופ' רון קנת

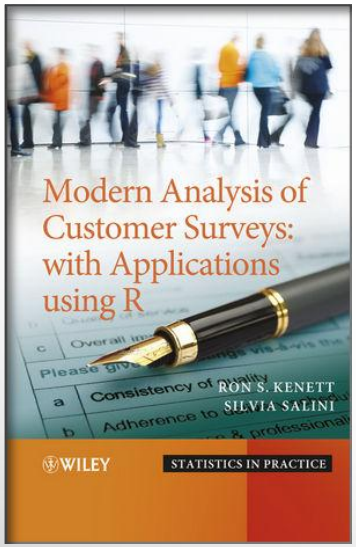
KPA

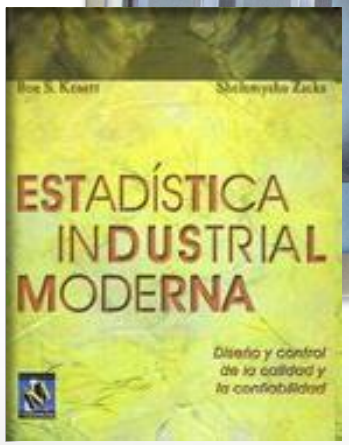
Process Improvement and CMMI for Systems and Software
Ron Kenett
Emanuel Baker

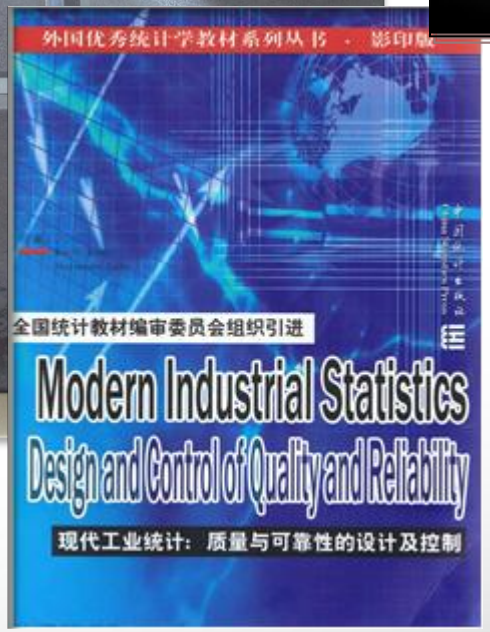

WILEY
Encyclopedia of Statistics in
QUALITY and RELIABILITY
EDITORS
Fabrizio Ruggeri
Ron S. Kenett
Frederick W. Faltin
VOLUME
1

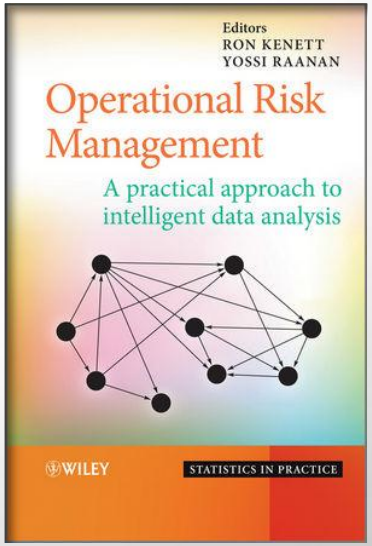

MODERN INDUSTRIAL STATISTICS
DESIGN AND CONTROL
OF QUALITY
AND RELIABILITY


Statistical Methods in Healthcare
Editors
Frederick Faltin | Ron Kenett | Fabrizio Ruggeri
WILEY


Modern Analysis of Customer Surveys: with Applications using R
RON S. KENETT
SILVIA SALINI
WILEY
STATISTICS IN PRACTICE


ESTADÍSTICA INDUSTRIAL MODERNA
Diseño y control de la calidad y la confiabilidad


外国优秀统计学教材系列丛书
全国统计教材编审委员会组织引进
Modern Industrial Statistics
Design and Control of Quality and Reliability
现代工业统计：质量与可靠性的设计及控制


Editors
RON KENETT
YOSSI RAANAN
Operational Risk Management
A practical approach to intelligent data analysis
WILEY
STATISTICS IN PRACTICE

נושאי ההרצאה

- רקע
  - InfoQ
  - Statistical Engineering
  - Web Based SPC Systems
  - Big Data Analytics
  - Risk Based Testing
- סיכום

היו זמנים...

SPECIAL SESSION IN COOPERATION WITH THE
RAELI STATISTICAL ASSOCIATION"

4.2.2 "A Non-Linear Regression for Predicting the Quantity of Spare Parts to be Manufactured"
M. Snyder, Tadiran.

4.2.4. "Optimal Maintenance and Replacement Policies"
Dr. Z. Keller, M.T. Giblin Univ. of Bradford U.K.

5.2.2. "The Precision of Test Methods"
J. Mandel, U.S. Bureau of Standards, U.S.A.

5.2.3. "Cusum Detection Scheme for Failure Rate Increase"
V.K. Srviastava, Telecom, Elect. Canada
N. Reiche

6.2.1. "Statistical Aspects of Quality Conformance Inspection in Military Standard Documents".
R. Kenett, Tadiran
A. Halevy, Rafael

6.2.2. "Sampling Plans Based on Producer's & Consumer's Risks".
A. Zonnenshain, Rafael.

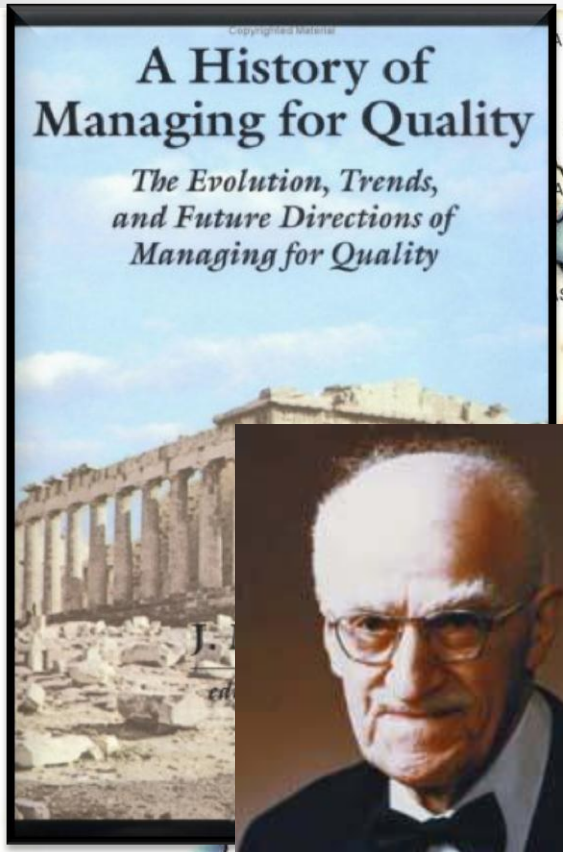
6.2.3. "Skip-Lot Sampling Acceptance Plans for Inspection".
B. Saperstein, I.A.I.

7.2.2. "The validity of the Use of Base Sample in Testing Adulteration of Fruit Juice"
C. Fuchs, E. Cohen, Tel-Aviv University

7.2.3. "Application of Statistical Tests for Quality Assurance of Israeli Citrus Juice".
E. Cohen, Ministry of Industry.

1984

אין שת"פ ISQ – ISA כבר למעלה מ 25 שנה



Management for Quality in Ancient Israel

Chapter 2

in

A History of Managing for Quality,
edited by J. Juran, Quality Press, 1995

PBS
PUBLIC
BROADCASTING
SERVICE

From q to Six Sigma and back

2004

Quality: Yesterday, today and tomorrow

הכינוס הלאומי ה-11
של האיגוד הישראלי לאיכות

מאיכות להצלחה עסקית

Quality Leading to Success

על איכות בארץ ישראל

KPA

Back to basics

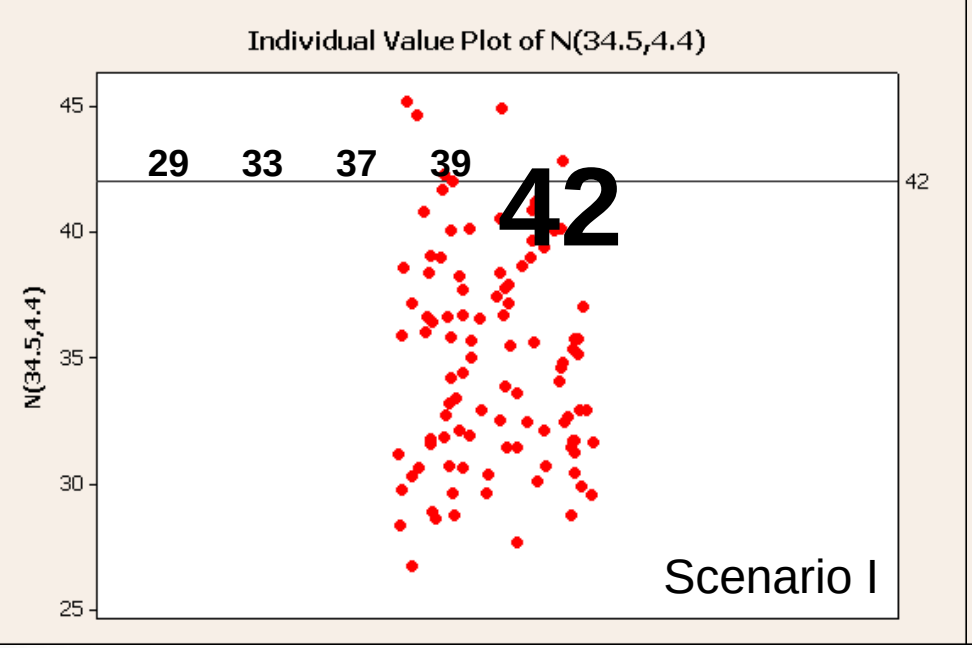
42

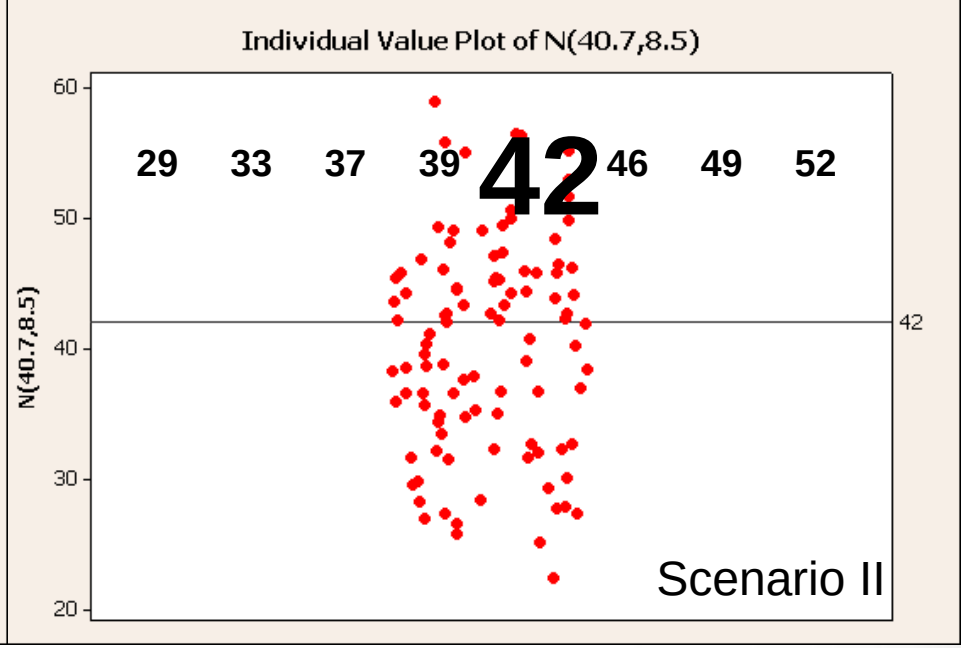
29 33 37 39 42

29 33 37 39 42 46 49 52

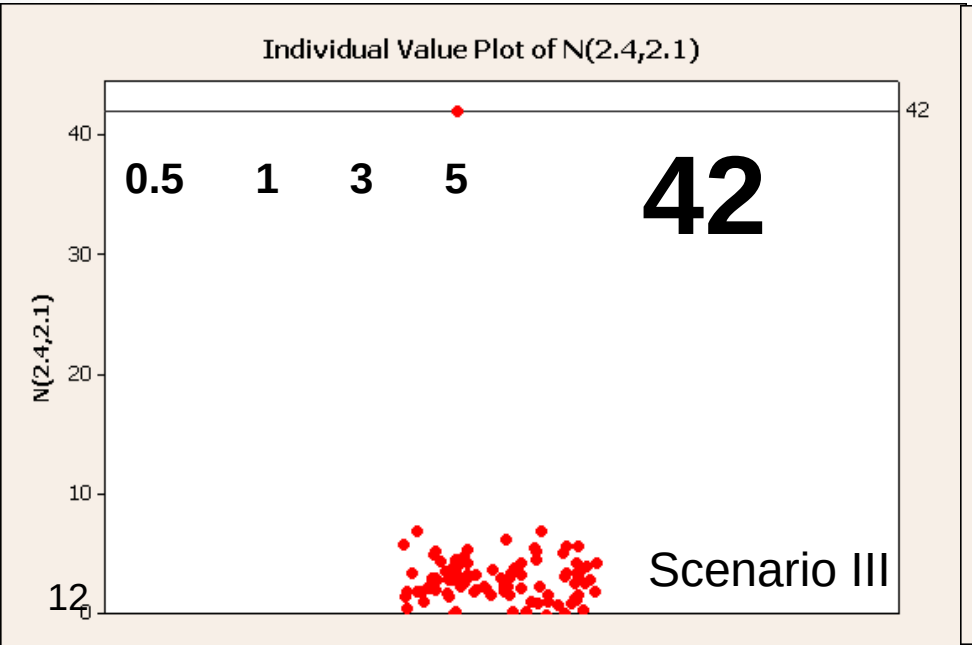
0.5 1 3 5 42

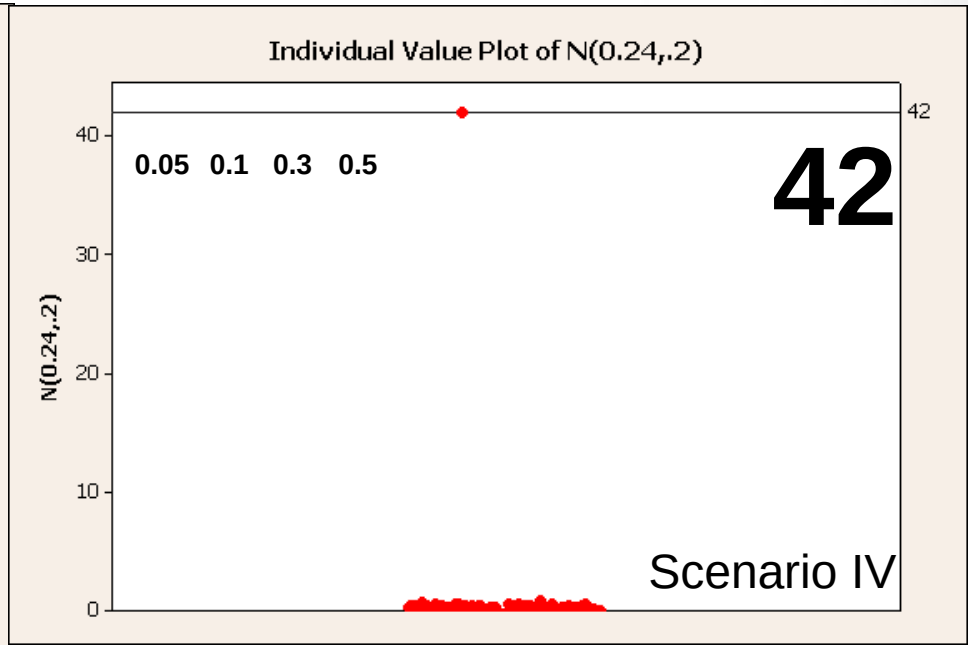
0.05 **0.1** **0.3** **0.5** **42**

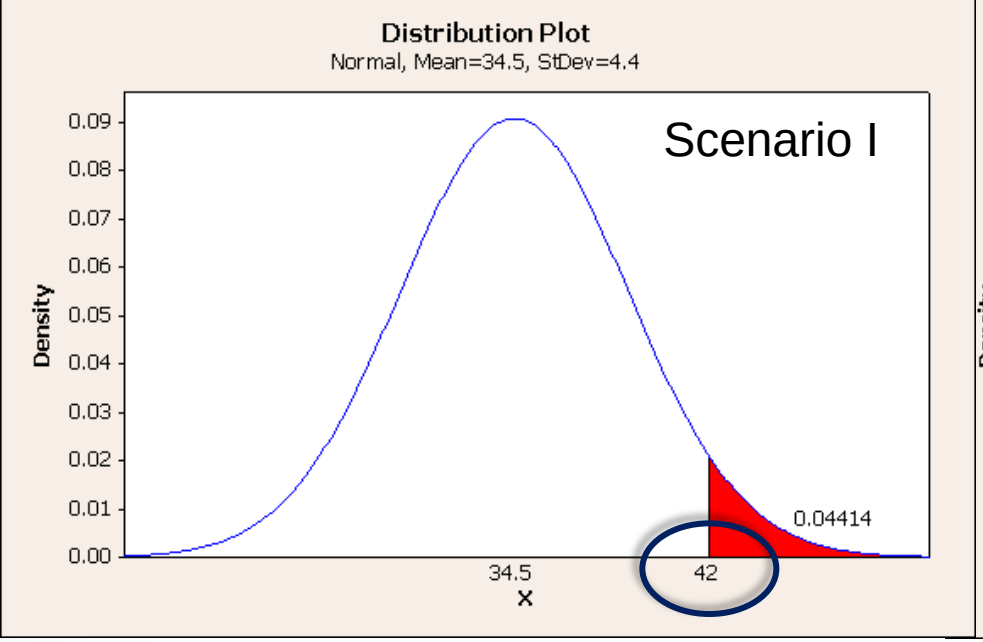


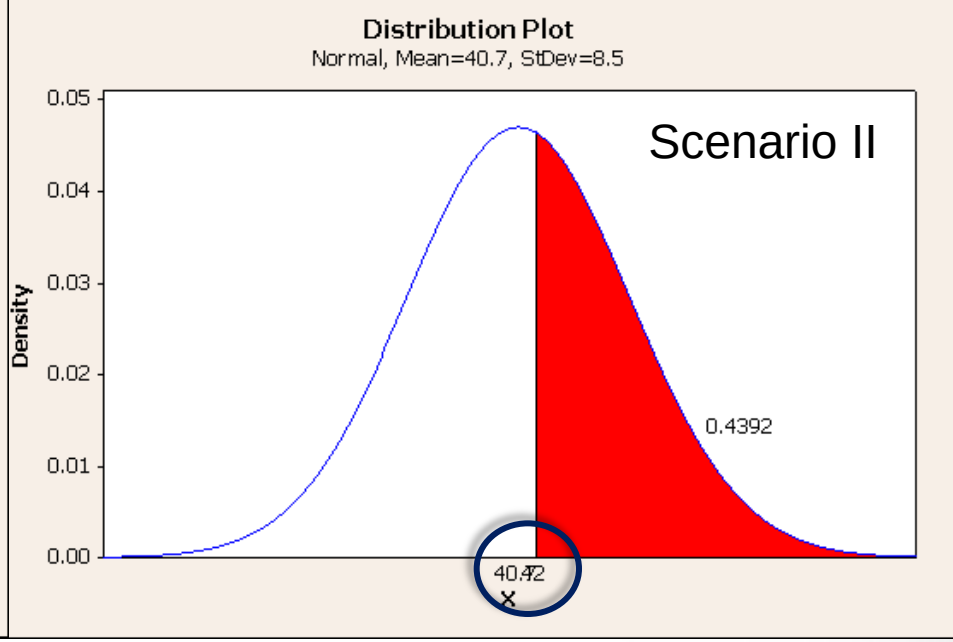


תרשים נקודות עם הרעדה

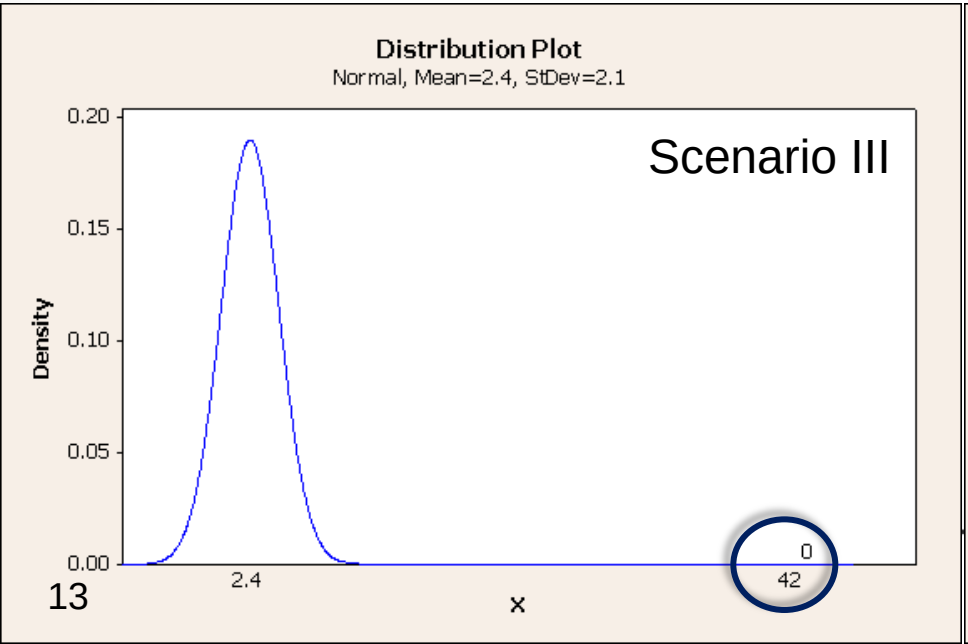


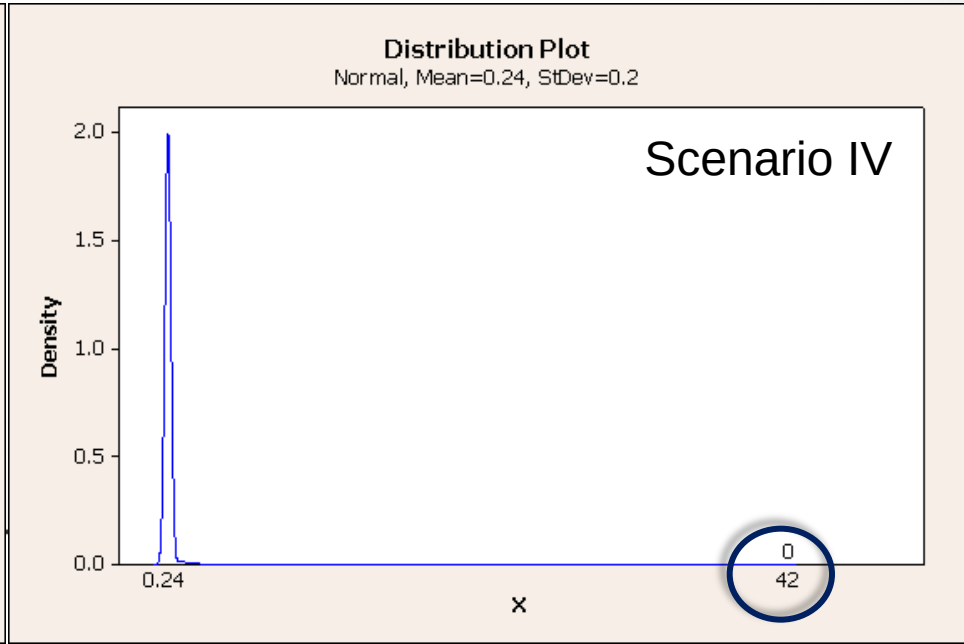


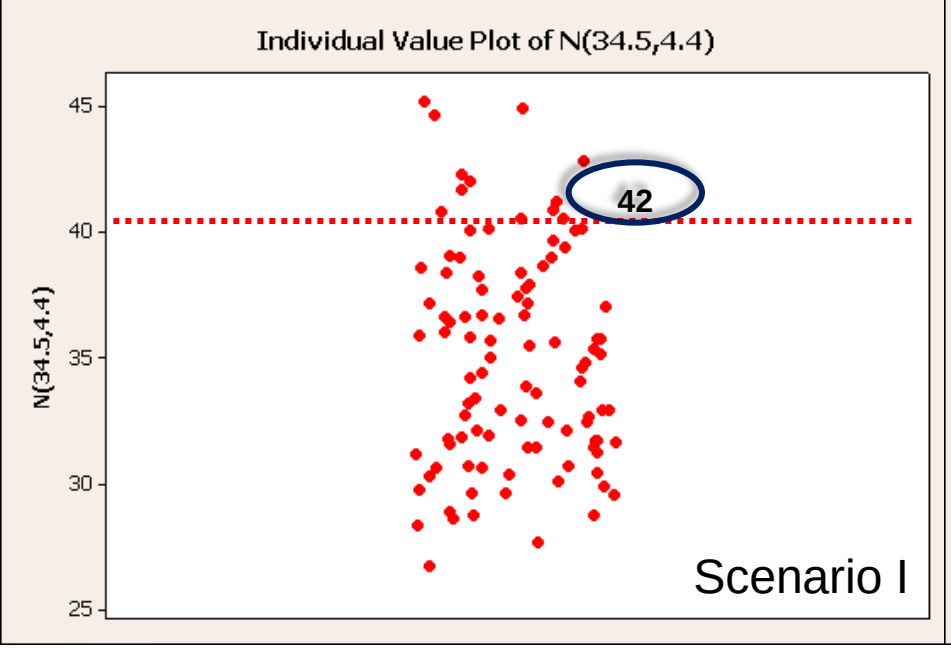


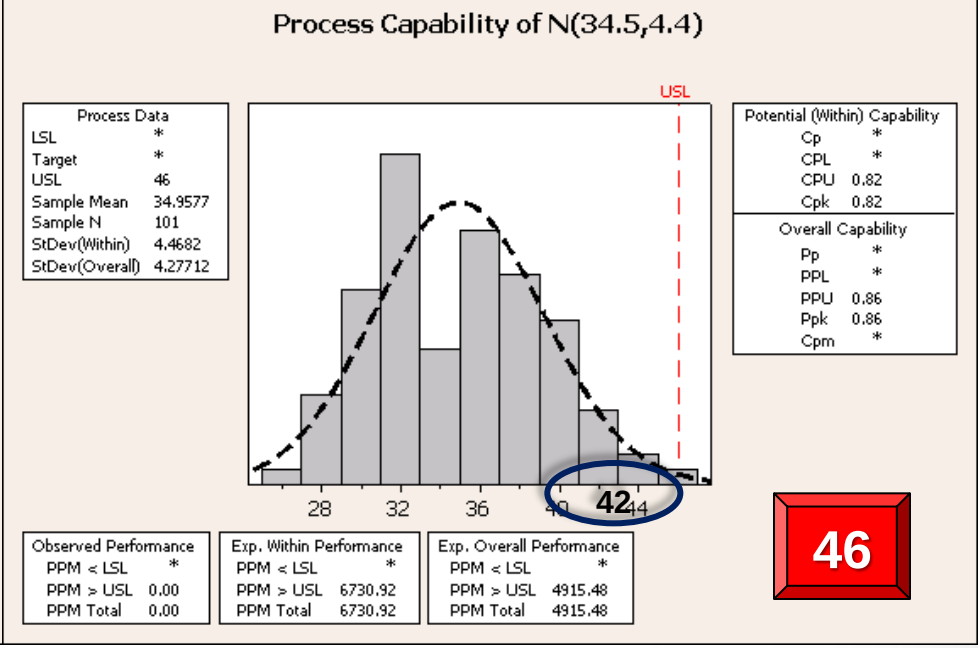


התפלגות נתונים סטטיסטית

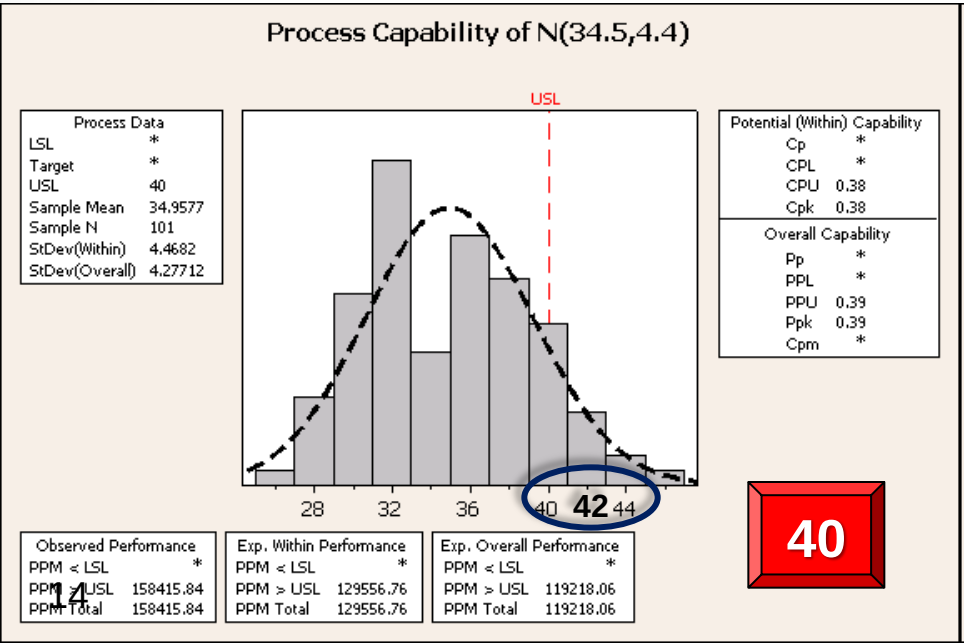


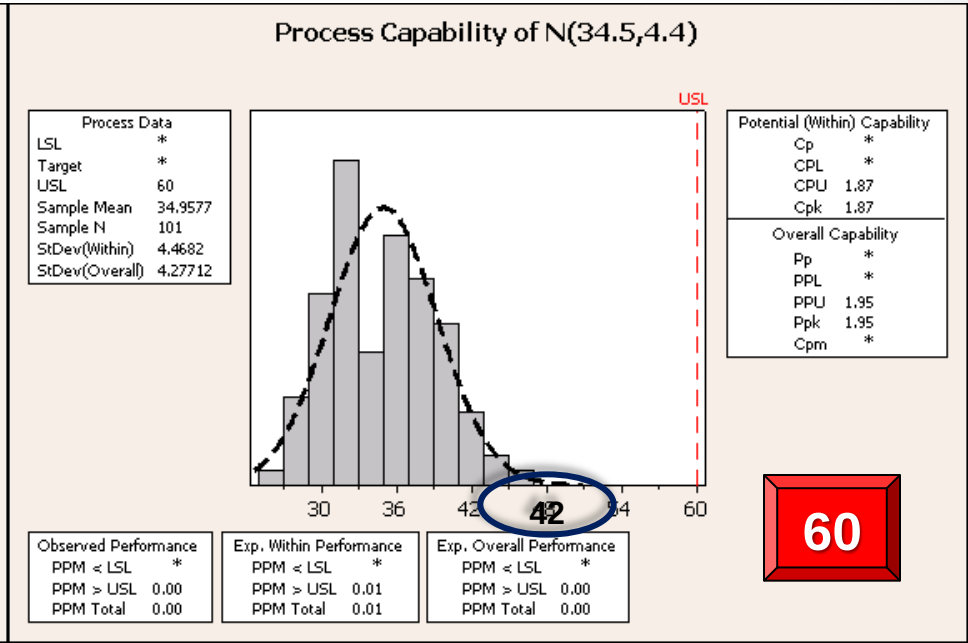


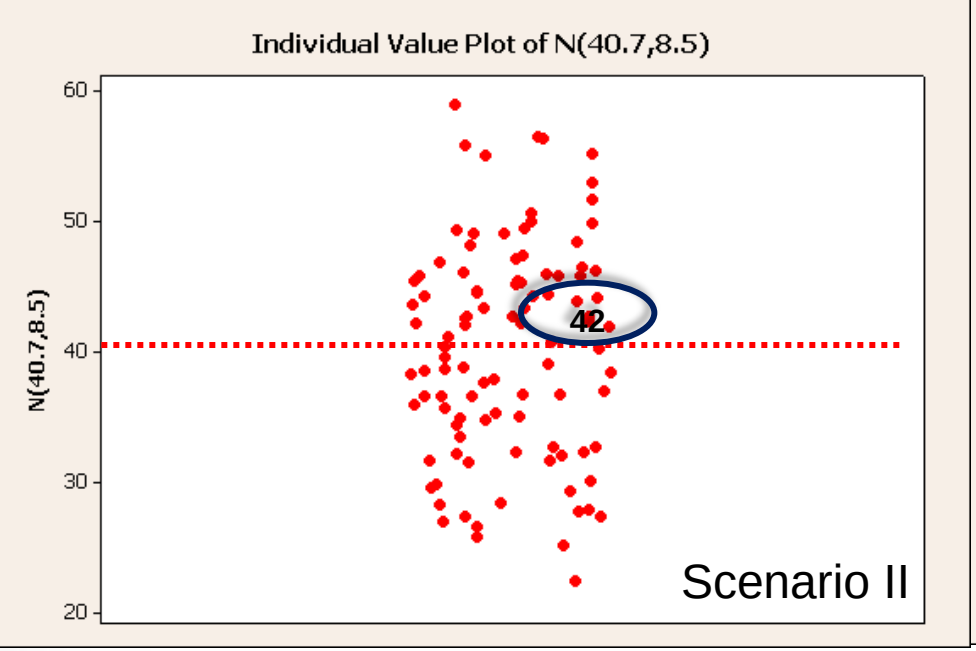


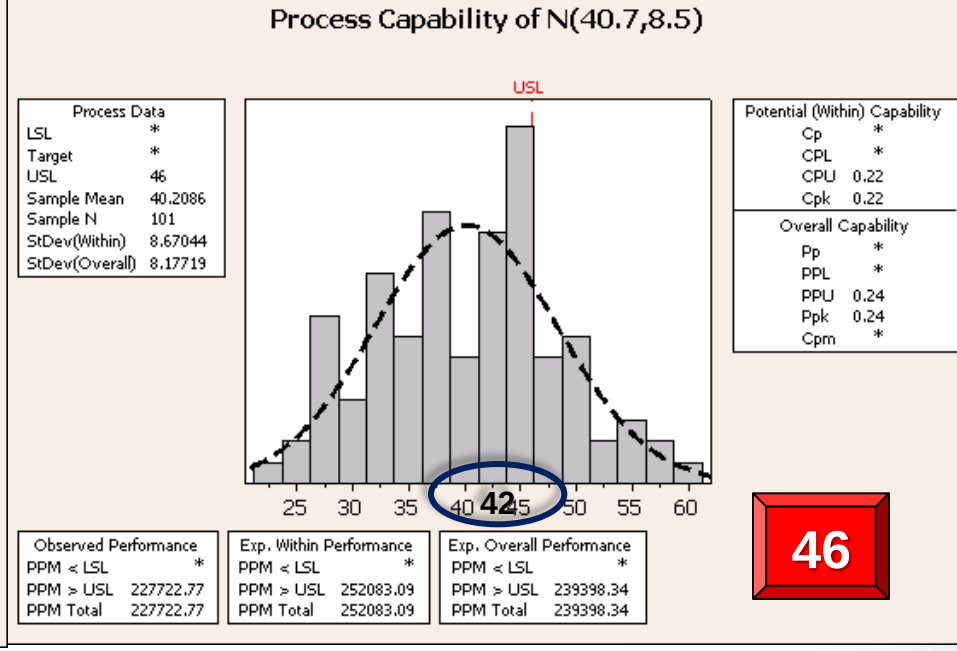


פרשנות נתונים בעזרת מפרט

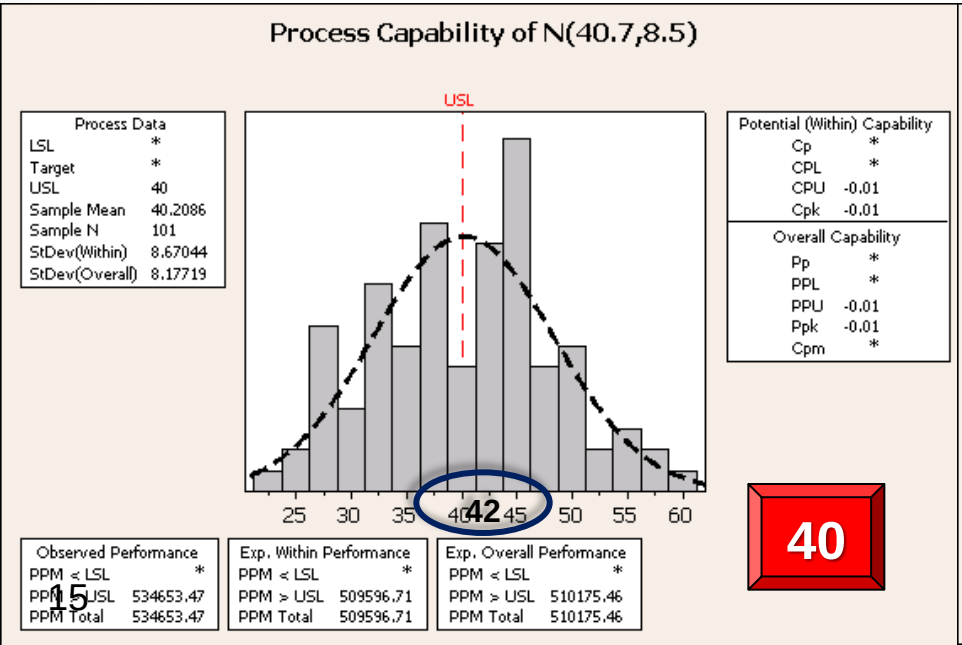


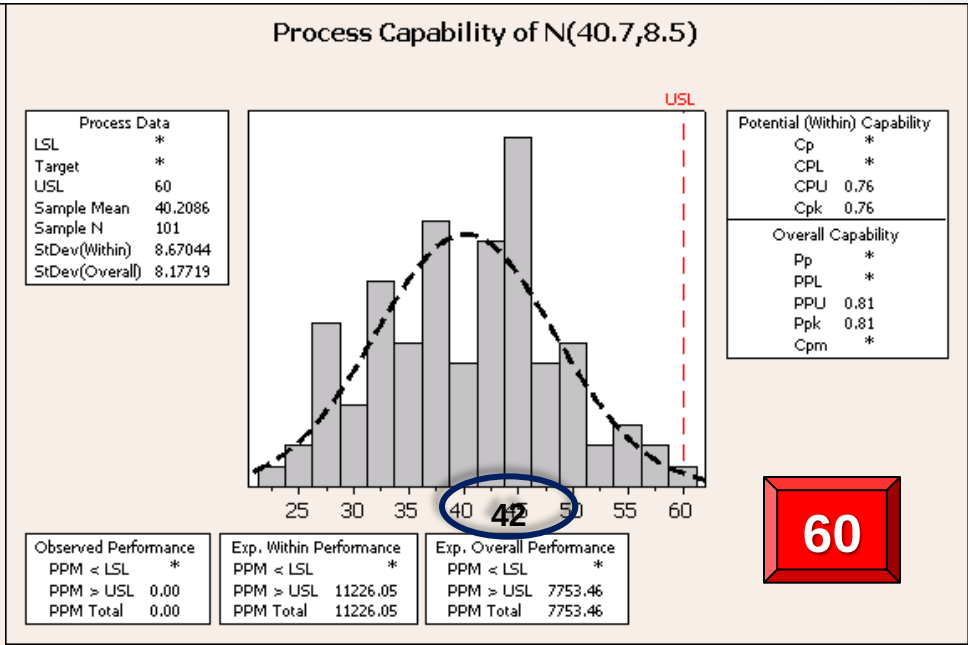


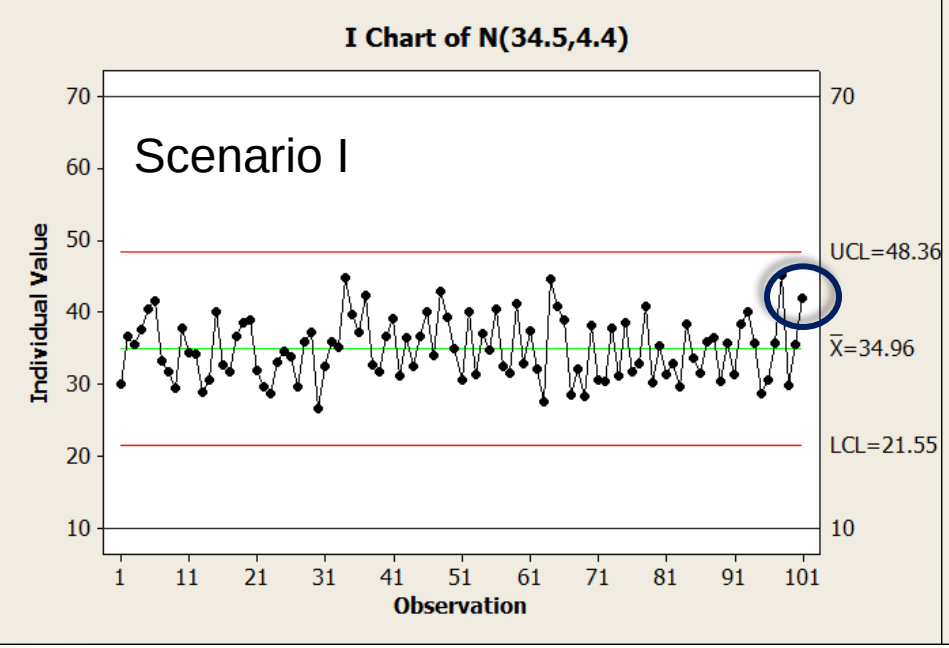


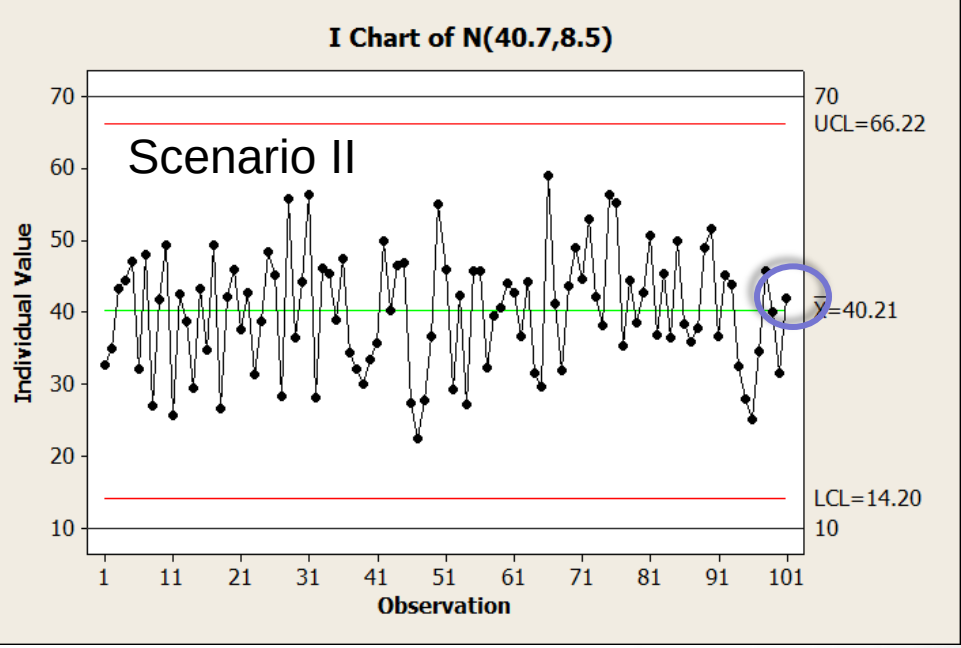


פרשנות נתונים בעזרת מפרט

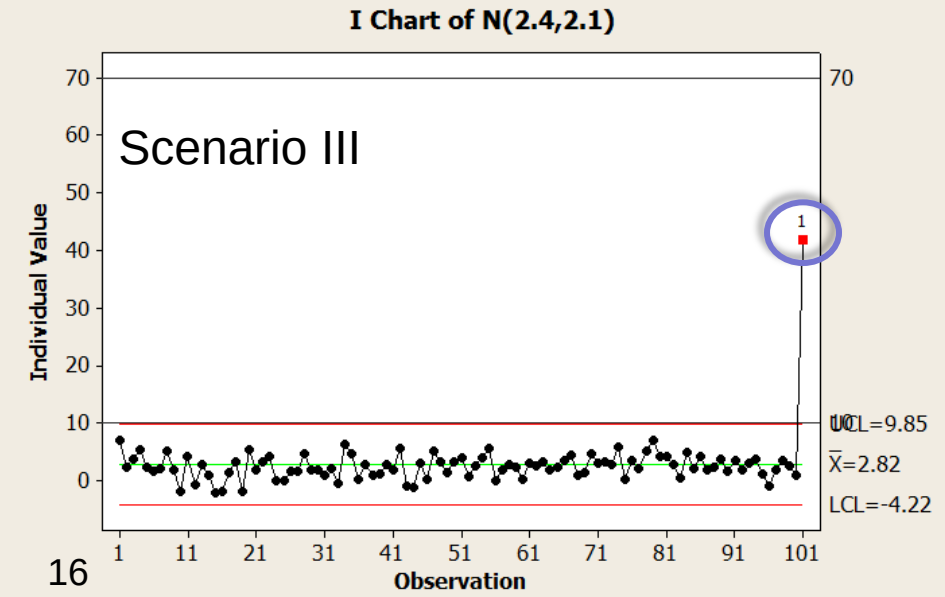


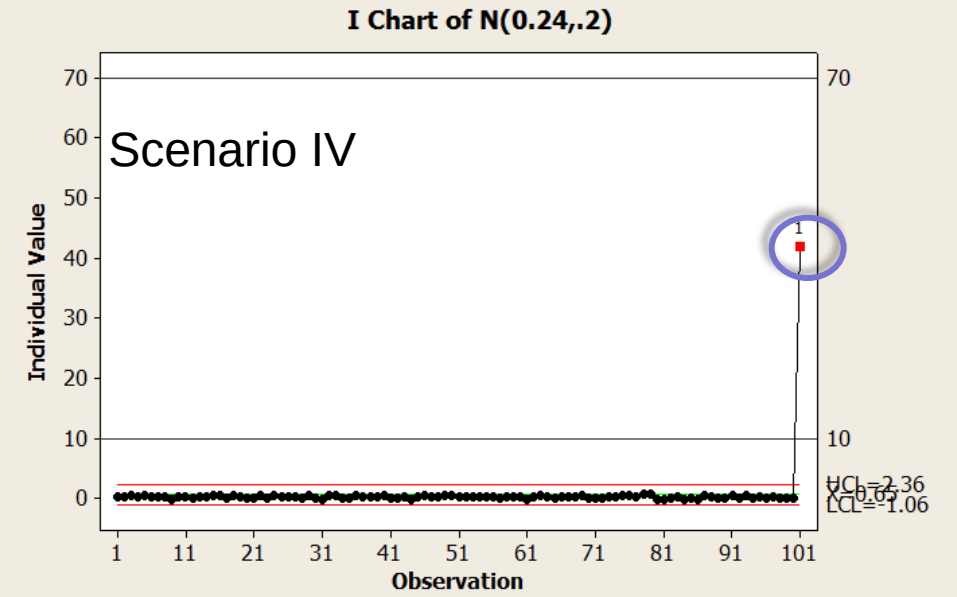


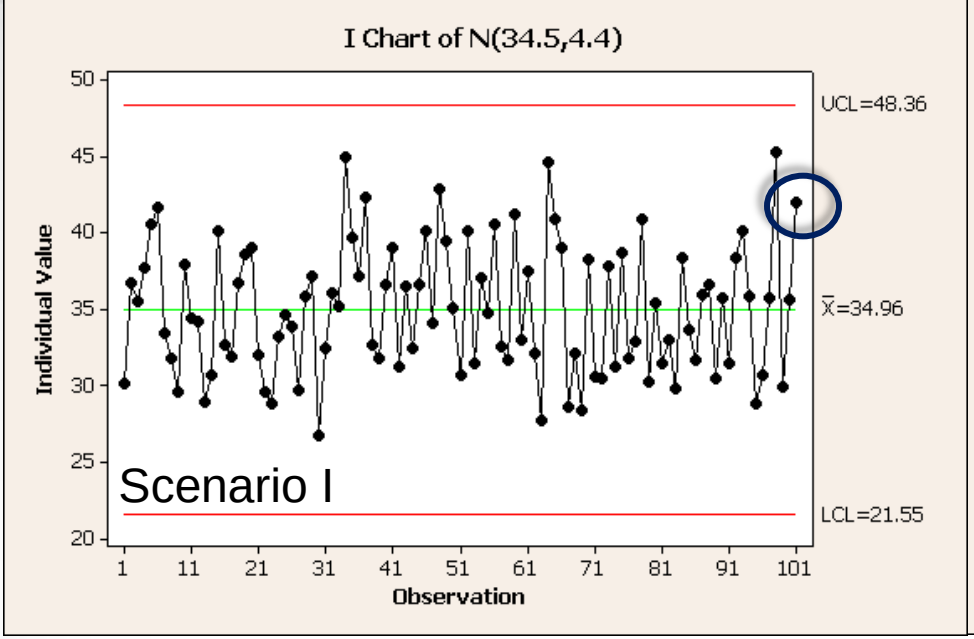

I Chart of N(34.5,4.4)
Scenario I
Individual Value
Observation
UCL=48.36
X=34.96
LCL=21.55

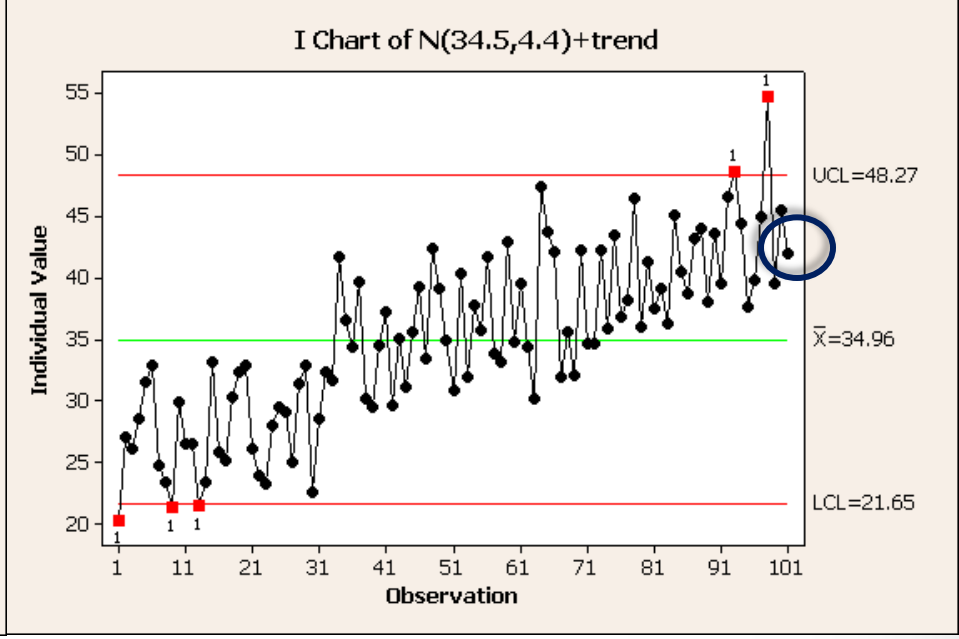

I Chart of N(40.7,8.5)
Scenario II
Individual Value
Observation
UCL=66.22
X=40.21
LCL=14.20

נתונים בזמן

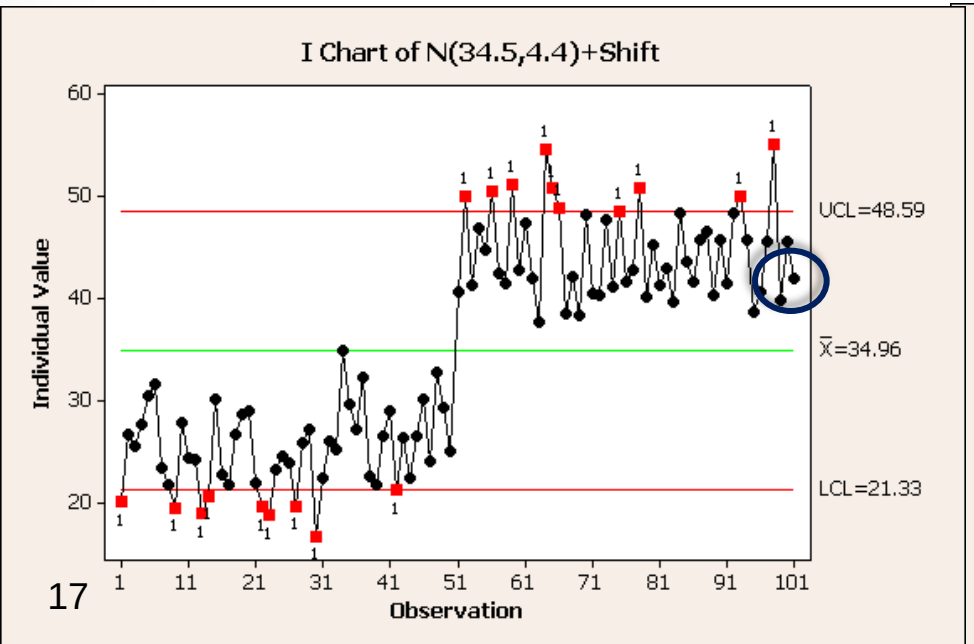

I Chart of N(2.4,2.1)
Scenario III
Individual Value
Observation
UCL=9.85
X=2.82
LCL=-4.22

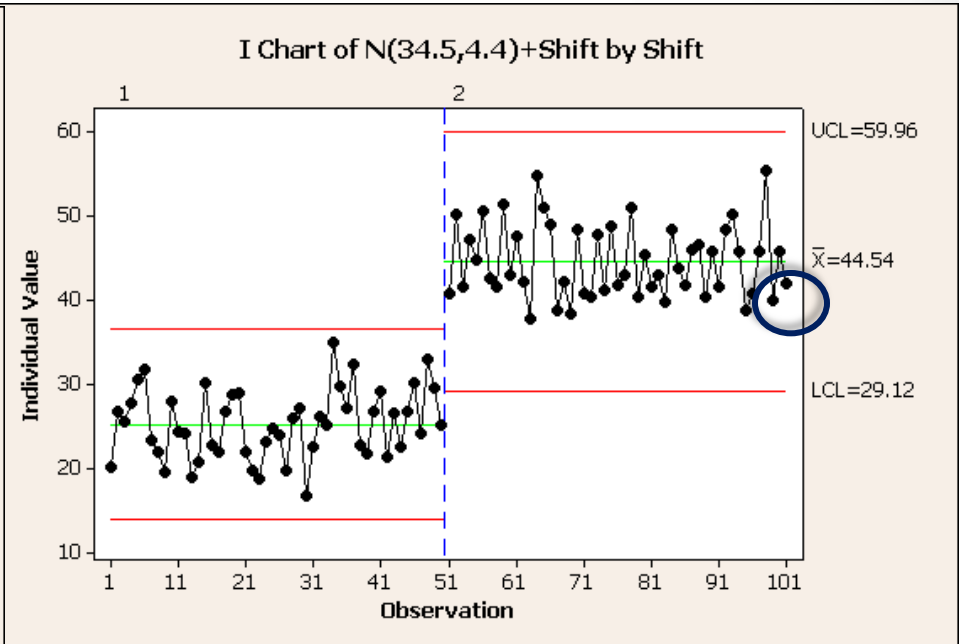

I Chart of N(0.24,.2)
Scenario IV
Individual Value
Observation
UCL=2.36
LCL=-1.06





תרשימי בקרה בתרחיש I





g	A specific analysis goal
X	The available dataset
f	An empirical analysis method
U	A utility measure

$$InfoQ(f,X,g) = U(f(X|g))$$

תובנה
knowledge

מידע
information

ממצאים
findings

ניתוח
statistical analysis

נתון
data

מספר
numbers

42

Information Quality (InfoQ)

Kenett R.S. and Shmueli G. (2012). On Information Quality, JRSS(A), with discussion, forthcoming

© 2012 KPA Ltd., All rights reserved

KPA

Insights through analytics

http://www.kpa-group.com

ADVANCED SERVICES English עברית Log in

KPA
Insights through analytics

CREATING INSIGHTS THROUGH
ANALYTICS SINCE 1990

OUR EXPERTISE | OUR CUSTOMERS | KNOWLEDGE BASE | ABOUT KPA | CONTACT US | CUSTOMER LOGIN | Search Site

ABOUT US

We are a leading Israeli management and analytics consulting firm with affiliates in Europe and the USA. Established 1990 by Prof. Ron Kenett as a center of excellence in modern management and analytic

OUR EXPERTISE

We successfully implement state of the art management and analytical methodologies, while dealing with down-to-earth organizational and business challenges. World class experts in running global

OUR CUSTOMERS

We serve companies from all sectors. Especially strong in global High-Tech and market leaders such as: HP Graphics Solutions Business (Indigo, Scitex), Objet, NICE, ECI, SanDisk, Coca Cola, 3M, Better

News and up coming Events

May 8, 2012 - Process Design Workshop with Prof. Vining

KPA

Definition: All work occurs in a system of interconnected processes, Variation exists in all processes, and Understanding and reducing variation are keys to success. Statistical thinking significantly improves the effectiveness of data analysis and statistical tools.

Why Statistical Engineering?

Definition: The study of how to best utilize statistical concepts, methods, and tools and integrate them with information technology and other relevant sciences to generate improved results

NASA Conference on Statistical Engineering
Williamsburg, VA
May 3rd, 2011

האם תחום האיכות בארץ משלב חשיבה/הנדסה סטטיסטית?

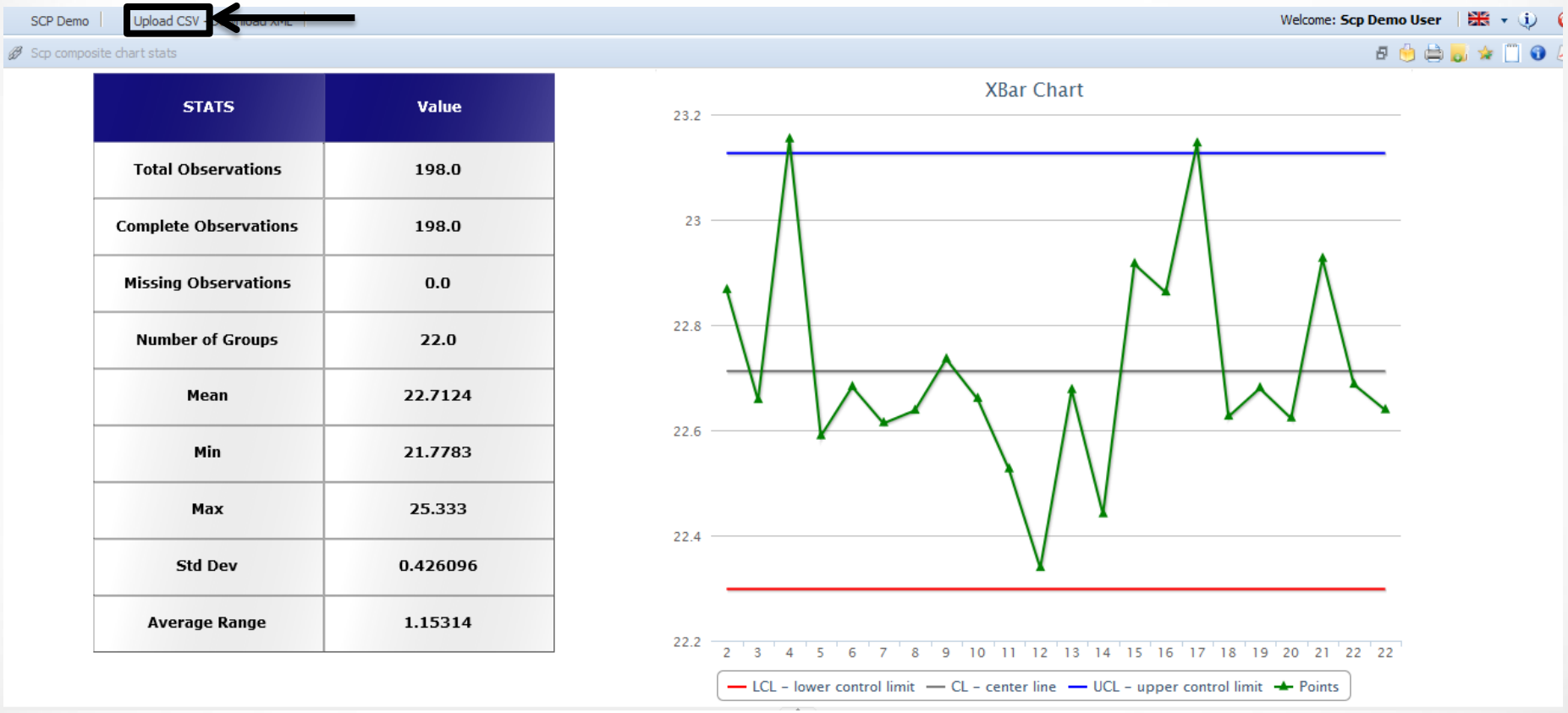
CMM Data

איכות בעידן המודרני

ET.3122.A.038-P_REV.03_long	1111						
10/05/2012 07:14							
(mm)	ACTUAL	NOMINAL	LO-TOL	HI-TOL	DEVIATION	GRAPHIC	ERROR
Temperature Compensation: OFF							
==========							
==========							
==========CAGE CRITICAL DIMENSIONS ==========							
========== [Datum Planes Definition] ==========							
Plane B ==========							
Plane:PLNB							
Flatness	ciao	0.1				+*--	
Perpendicular	0.0489	0.1	DAT(datA)			+*--	
Plane C ==========							
Plane:PLNC							
Perpendicular	0.002	0.05	DAT(datA)			*---	
Flatness	0.0019	0.03				*---	
Perpendicular	0.0055	0.05	DAT(datB)			*---	

KPA

The KPA Web Based SPC System



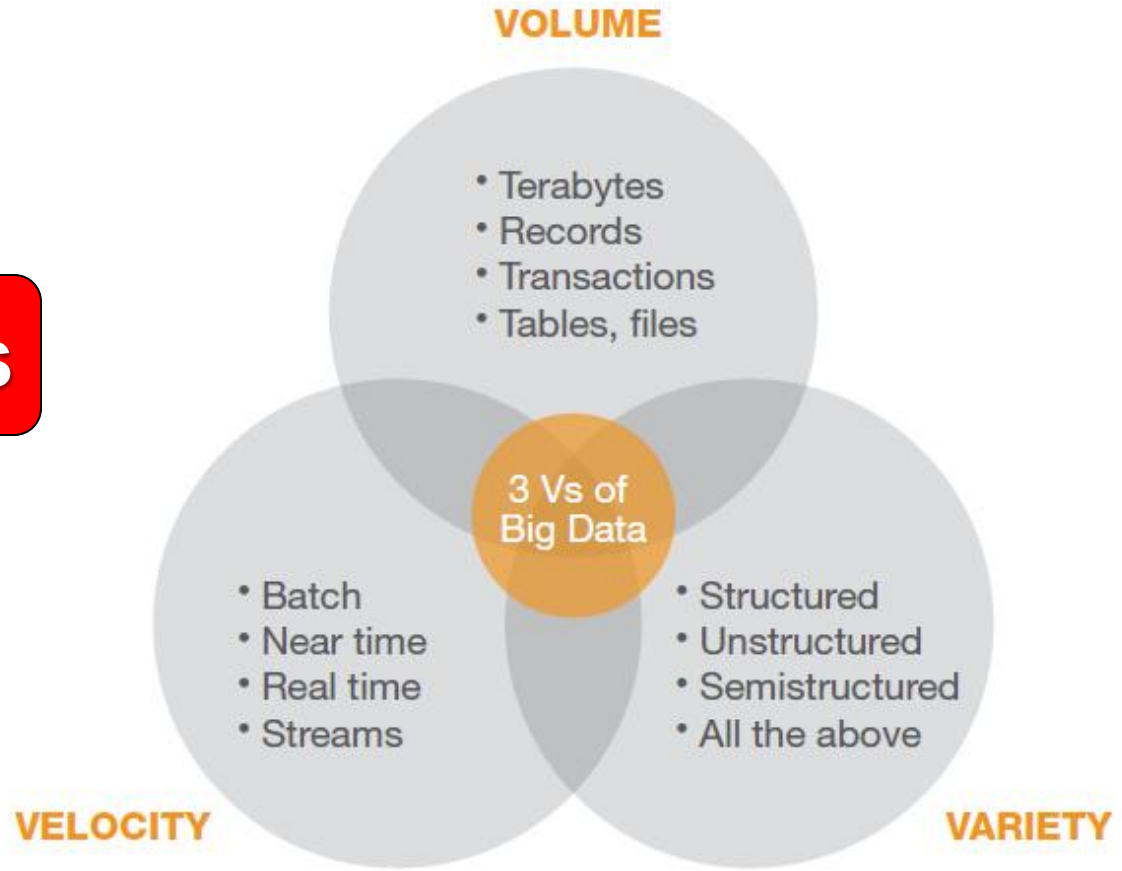
STATS	Value
Total Observations	198.0
Complete Observations	198.0
Missing Observations	0.0
Number of Groups	22.0
Mean	22.7124
Min	21.7783
Max	25.333
Std Dev	0.426096
Average Range	1.15314

The KPA SPC- WBS software can import data from a variety of sources including any type of ODBC connection, including SAP and Oracle, or from a CSV file.
The production data will then be stored in a new relational database to be accessed by the reporting features of the system in order to present control charts and out of control events.

Power	Prefix
10^9	Giga
10^{12}	Tera
10^{15}	Peta
10^{18}	Exa
10^{21}	Zetta
10^{24}	Yotta

Big Data

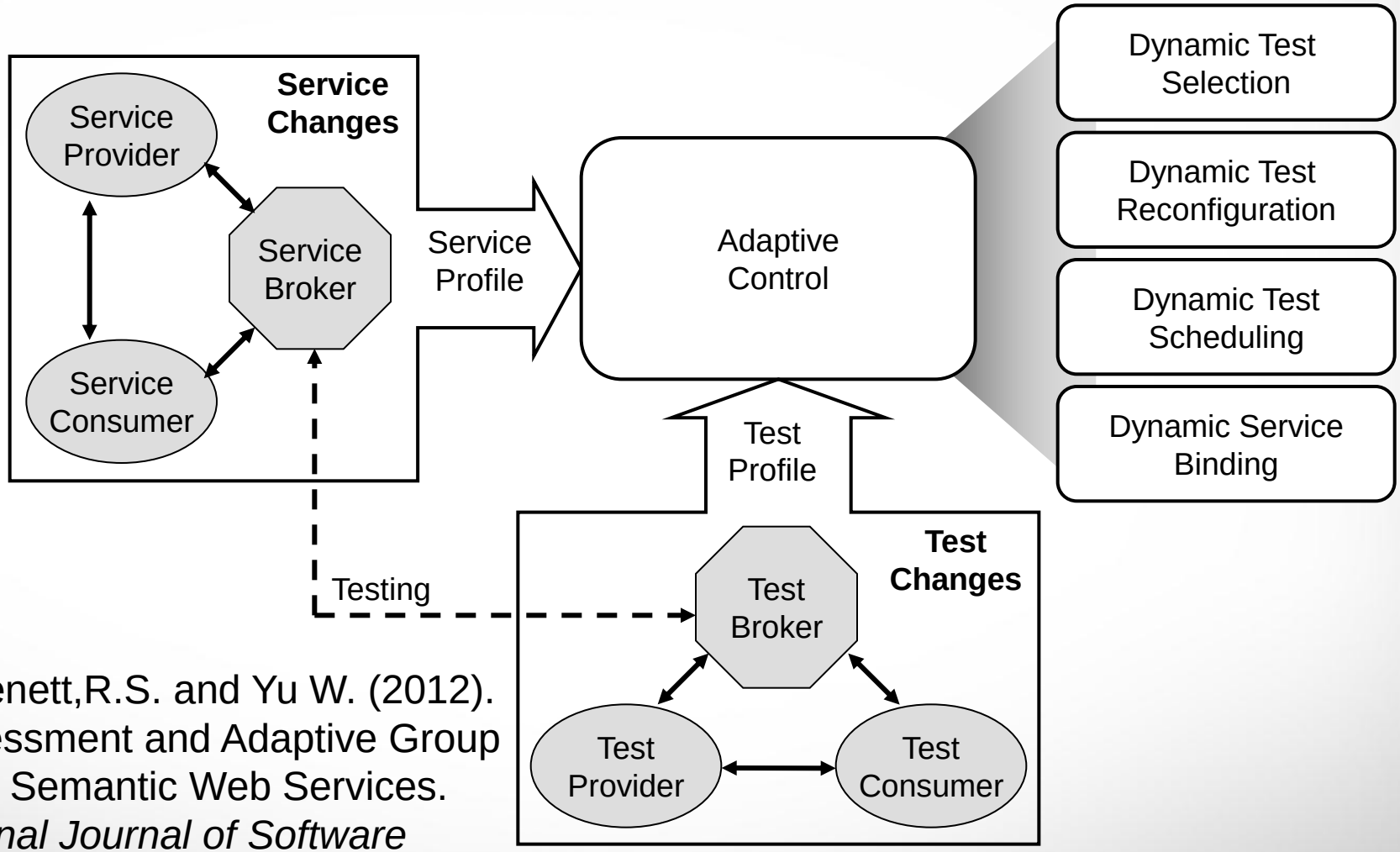
IDC's estimates the amount of information we create to be ~1.8 zettabytes. that is 1.8 trillion GB.



Big Data Analytics

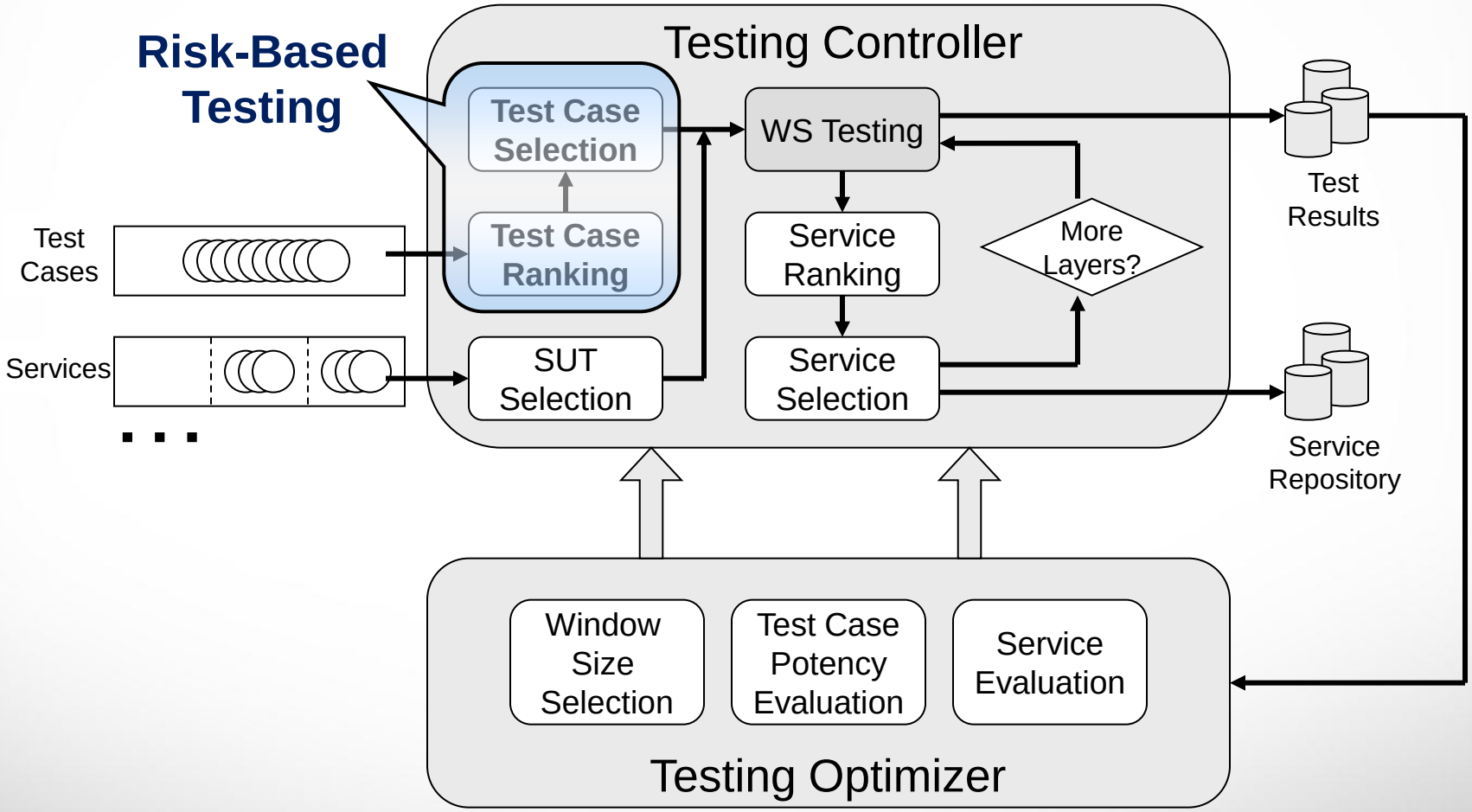
Average rank	Institution	NETBIG	GIMS	RCCSE	CUAA
1.3	Tsinghua University	1	1	1	2
1.8	Peking University	2	2	2	1
3.5	Fudan University	4	4	3	3
4.0	Zhejiang University	5	3	4	4
4.8	Nanjing University	3	6	5	5
7.0	Shanghai Jiao Tong University	7	9	6	6
8.8	Wuhan University	13	7	7	8
9.5	University Science and Technology of China	5	15	8	10
10.3	Huazhong University of Science and Technology	15	5	14	7

Adaptive Web Services Testing

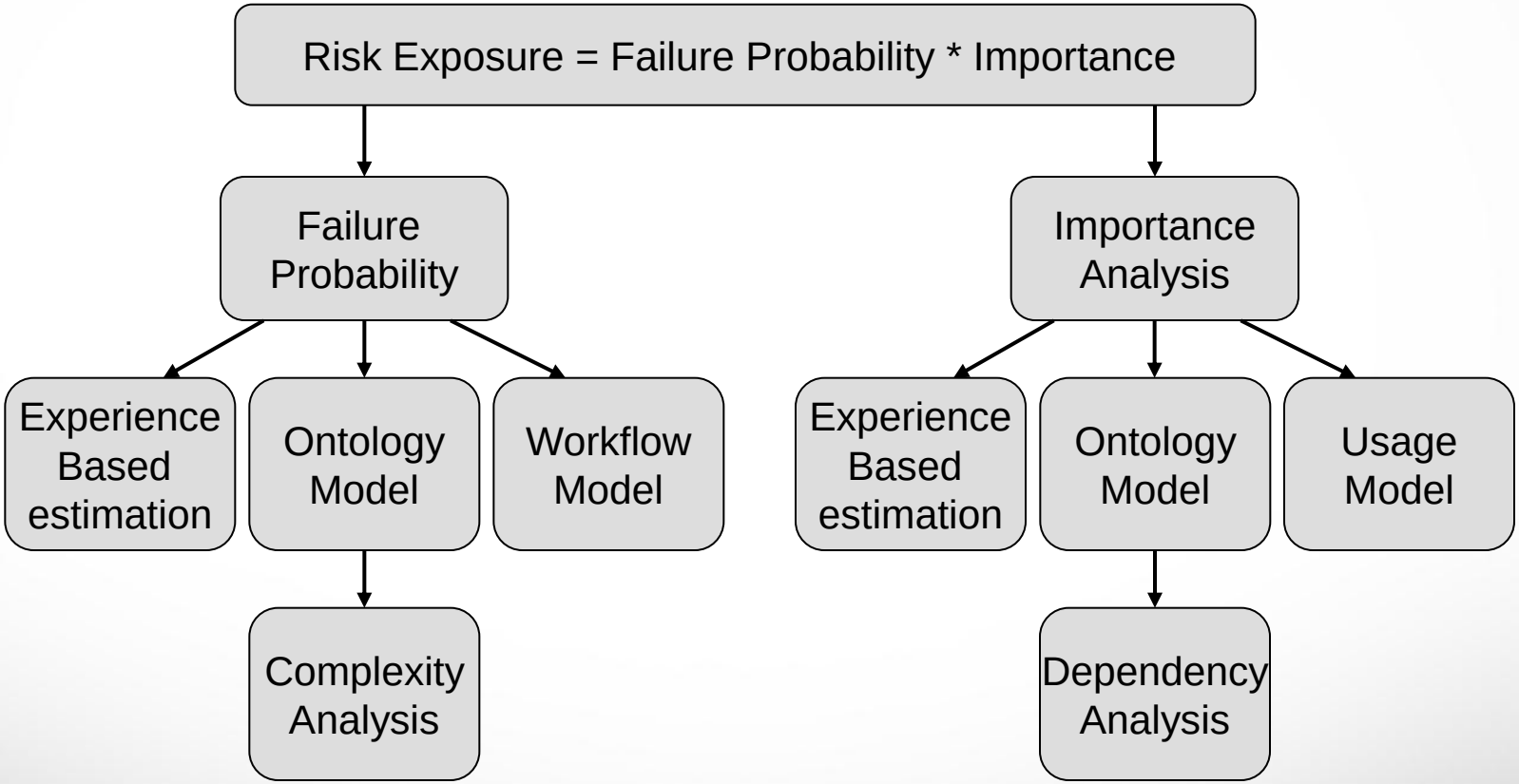


Bai X., Kenett,R.S. and Yu W. (2012). Risk Assessment and Adaptive Group Testing of Semantic Web Services. *International Journal of Software Engineering and Knowledge Engineering*

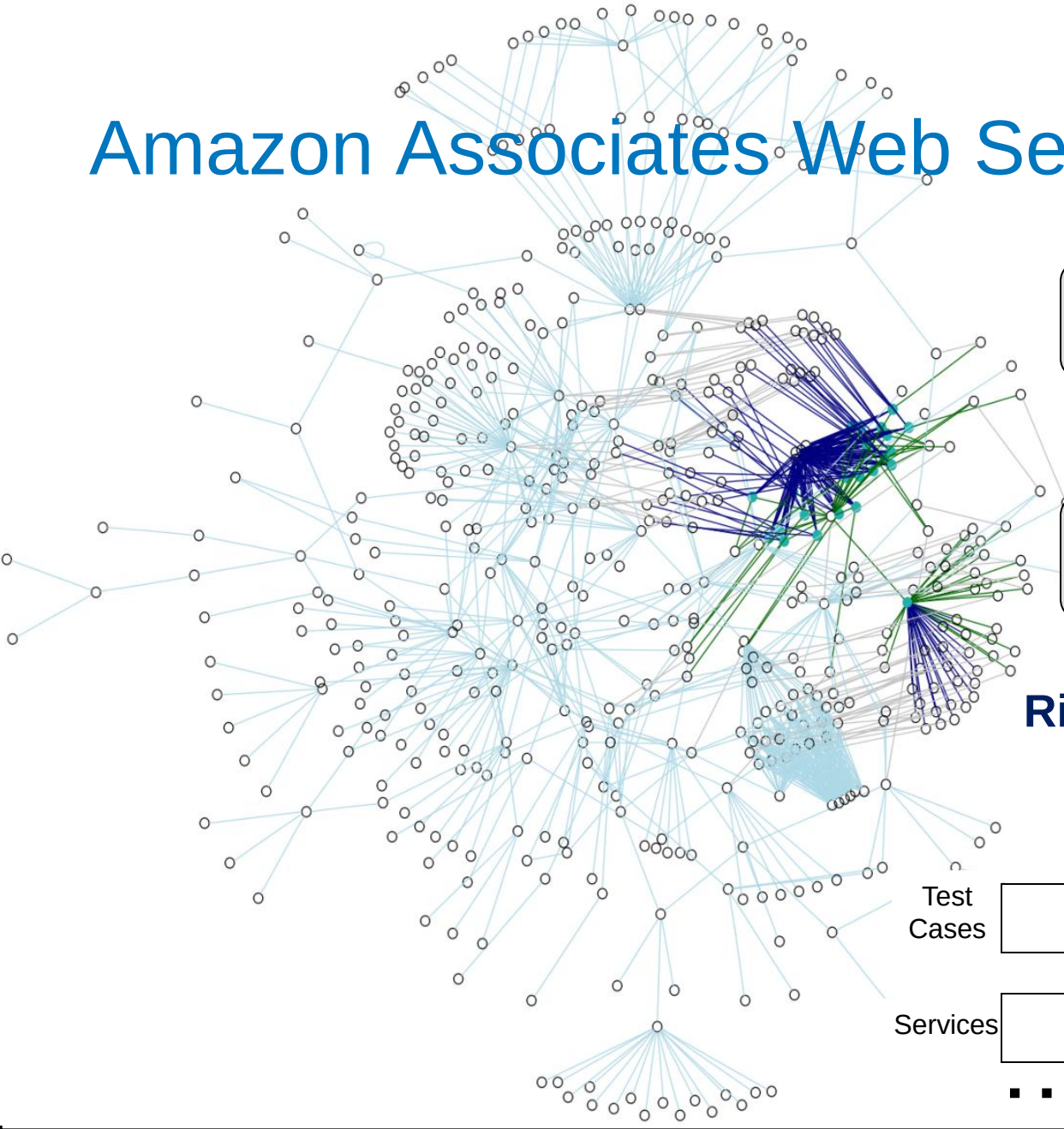
Group Testing with Control Architecture



Risk Assessment of Semantic Web Services



Amazon Associates Web Services



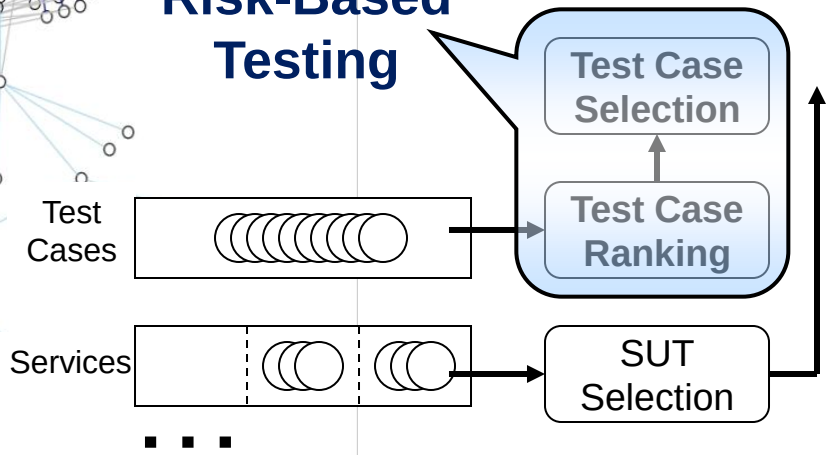
AAWS WSDL

19 operations with Complicated data structure

Ontology Model

514 classes and 1096 dependency relationships

Risk-Based Testing



KPA

סיכום

- האם תחום האיכות בארץ משת"פ עם תחומים אחרים?
- האם תחום האיכות בארץ מקדם חשיבה סטטיסטית?
- האם תחום האיכות בארץ נערך למערכות מרובות נתונים?
- האם יש מחקר ופיתוח בתחום האיכות בארץ?