

Example of Quantitative Research

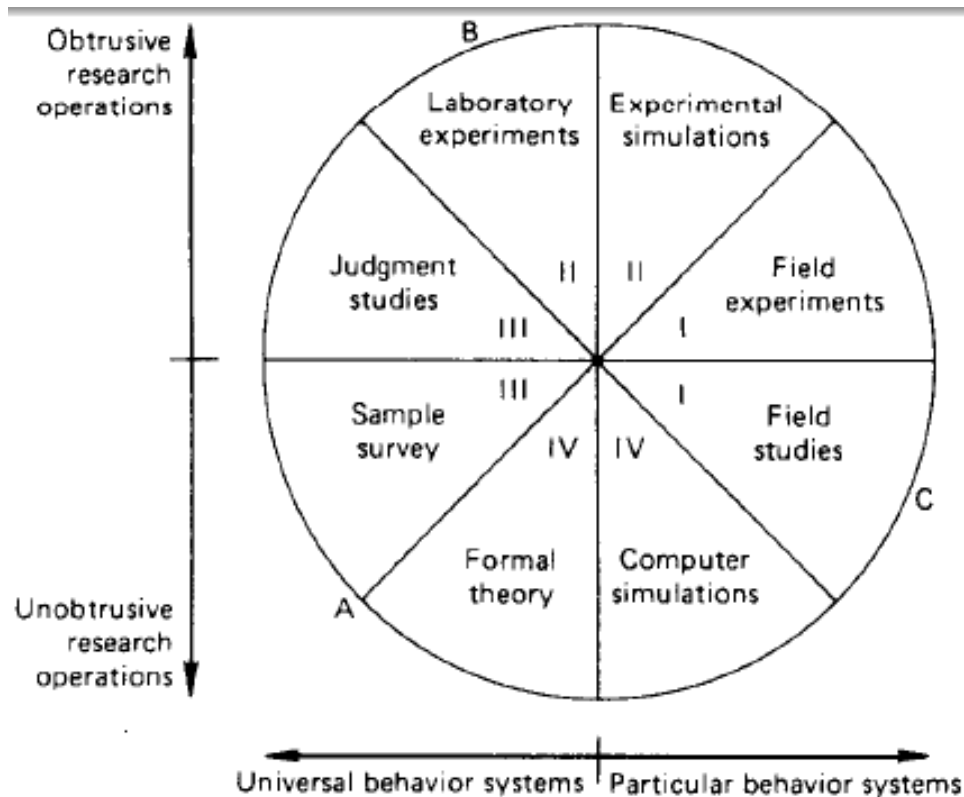
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IT-Topics 8/2-2017

Starting point

- Area of research – research traditions
- Research Question (s)
- Research method to respond to the research question
 - Universal/particular
 - Obtrusive or unobtrusive research
- Research design

McGrath – Specter of research methods

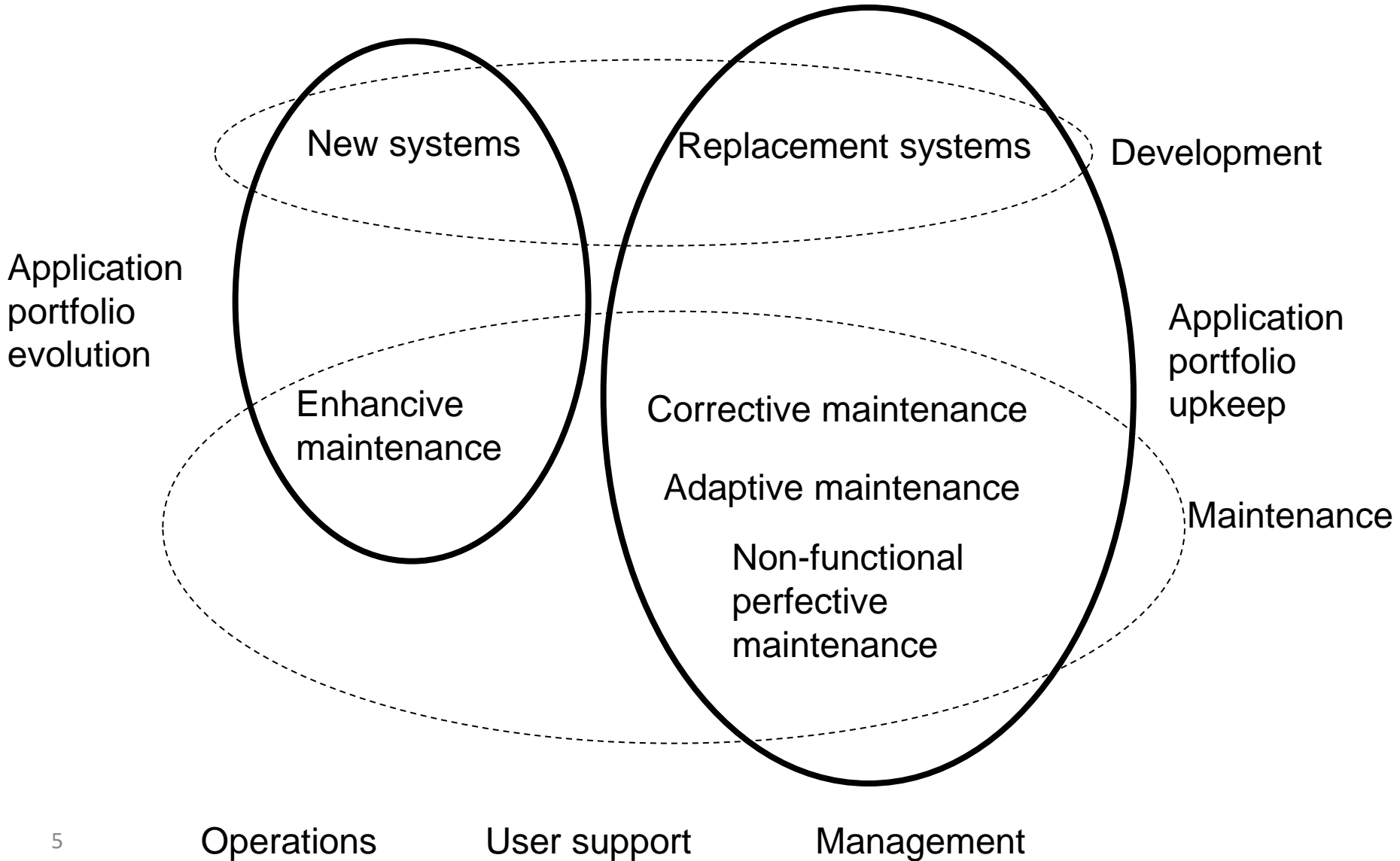


- I. Settings in natural systems.
- II. Contrived and created settings.
- III. Behavior not setting dependent.
- IV. No observation of behavior required.
- A. Point of maximum concern with generality over actors.
- B. Point of maximum concern with precision measurement of behavior.
- C. Point of maximum concern with system character of context.

Example – from article

- Setting: In Norway – Selected Norwegian organizations, use of resources in IT-department
- Survey: First time in 1993, then every fifth year (fifth time in 2013). Web-form with questions. Lately coupled with Rambøll IT i praksis (2014, 2015, 2016, 2017)
- Lientz/Swanson-tradition (1977)
- H1: There is no difference between the percentage of maintenance time in our survey and what are reported in previous surveys.
- H2...

Short on the research area



Points relative to research design

- Population-selection (member-organizations of Dataforeningen)
- Decide hypothesis
- Design survey form
- Pilot survey-form
- Implement surveyform in SurveyMonkey/Questback
- Send (and resend) invitation to participate
- Select, clean and transfer data (in my case to SPSS)
- Check characteristics of variables
- Do analysis relative to the hypothesis fitting the variable characteristics

Quantitative technique enable the use of statistics

- 40+ items (e.g. organizations in this case)
- The more the better (easier to find significant differences) - practical limitations
- Correlation vs causation ?
- Numbers are deceptive, enable analysis, but removes context (are the items really equal in the relevant dimension?)
- Tempting to use the data exploratory
- Takes skill to use statistics correctly, there is always another layer of statistical method discussion

Issues with survey investigations

- Population – Norwegian organization with own IT-activity
- Response rate
- Respondents (managers or developers)
- Equal understanding of concepts – pilot studies
- Biased questions
- Quality of data

Combining quantitative and qualitative techniques

- Cases to dig more deeply into one or a few specific cases (i.e. to check certain assumptions)
- Generalizability issue of case results

Some literature

- Wohlin C., Aurum A. (2014): Towards a decision-making structure for selecting a research design in empirical software engineering. *Empirical Software Engineering Journal*, Springer, 1-29
- Kitchenham, B.A., Pfleeger, S.A. (2002): Principles of Survey Research Part 2: Designing a Survey. *ACM SIGSOFT Software Engineering Notes* 27(1):18-20.
- Pinsonneault A., Kraemer K. (1993): Survey Research Methodology in Management Information Systems: An Assessment. *Journal of Management Information Systems* 10(2):75-105.
- McGrath, J. E. (1984). *Groups: Interaction and Performance*. Inglewood, N. J.: Prentice Hall, Inc.