

# 3 CRITERIA

## FOR MEASUREMENT AND ANALYSIS IN PROJECTS

Analysis of Large Scale Social Networks

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1. Validity
2. Reliability
3. Scalability



# 1. Validity

This is the extent to which a conclusion or measure accurately represents the real world:

- External validity is related to the generalization of the results of your analysis of a particular data-set. Does the results hold in other situations, with different data, with different people?
- Construct validity is related to the claim that a certain property really measures what it is supposed to measure.

## 2. Reliability

## 3. Scalability

# 1. Validity

## 2. Reliability

This refers to the overall consistency of the analysis.

- Inter-method reliability is most relevant for social network analysis and refers to the degree to which results and conclusions remain consistent after the application of different methodologies (eg different clustering techniques).

## 3. Scalability

# 1. Validity

# 2. Reliability

# 3. Scalability

Scalability refers to the extent to which proposed methodologies can cope with the fact that real world network can be huge in size.

- Time Complexity: This refers to the time needed for the analysis as a function of the input size of the network
- Space Complexity: This refers to the storage both in memory or in disk needed for storing and processing the data. In a second order it also refers to the IO-operations and network traffic required for data processing

- ▶ Read paper on Air Transportation Network (Course Documents on Toledo)
- ▶ Discuss with your neighbour these 4 questions:
  1. Which centrality measures were used?
  2. What is the observed and expected relation between the first two?
  3. What explanation is given?
  4. What about validity, reliability and scalability of the data source, measures and explanation?

## ASSIGNMENT