1. What is online reputation system?
- Collecting evidence about the properties of individual entities,
- Analyzing and aggregating the evidence,
- Disseminating the aggregated results.

2. Value of online reputation system
- Consumers are willing to pay at least 20% more for services receiving an “Excellent,” or 5-star, rating than for the same service receiving a “Good,” or 4-star, rating.
- eBay sellers with established reputation could expect about 8% more revenue than new sellers marketing the same goods.

3. Manipulations
- Some eBay users are artificially boosting their reputation by buying and selling feedbacks;
- Many small companies provide “reputation boosting” services for sellers at Taobao, which is the largest Internet retail platform in China and has taken up about 3/4 of the market share;

4. Defense Objective
- Identify target entities and malicious users;
- Eliminate dishonest feedbacks/ratings;
- Protect reputation scores, so that it can reflect the real quality of an entity.

Scenario Modeling

- System Model
- Attack Model
- Propered Schemes

Step 1: Change Detector
- Why Change Detector?
  - Most entities have Intrinsic and stable quality
  - Rapid changes = Indicators of anomaly.

Step 2: User Correlation Analysis
- Suspicious Users who rate in the suspicious interval

Step 3: Malicious Users Group Identification

Performance
- Testing Data Collection - Cyber Competition
  - Run from 05/12/2008 to 05/29/2008
  - Attracted 630+ registered users
  - 70+ universities
  - 750,000+ submissions of attack data

Impact Discussion
To protect the online reputation system against manipulations, TAUCA has:
- Recognize the target entities under attack accurately;
- Identify the suspicious time interval, when unfair ratings appear;
- Distinguish malicious users from normal users, unfair ratings from normal ratings;
- Recover reputation score for target entities.

As a summary, by detecting attacks and recovering reputation scores, TAUCA helps to ensure online reputation systems, and therefore, provides a more secure and reliable online interaction environment for online participants.