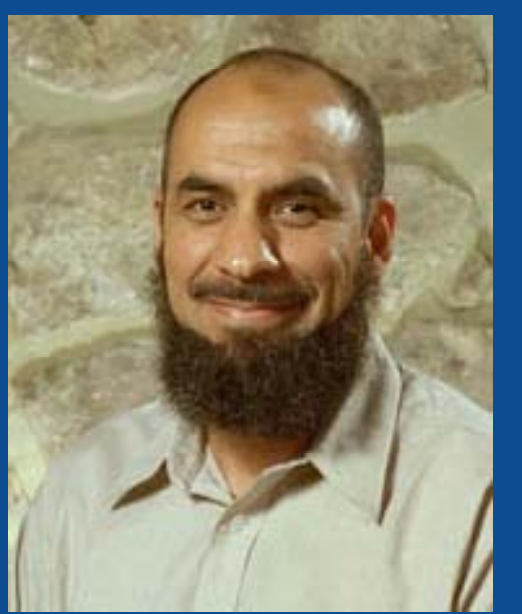


Reputation Management for Web Services

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<http://www.eceg.cs.vt.edu/WS-reputation/index.htm>

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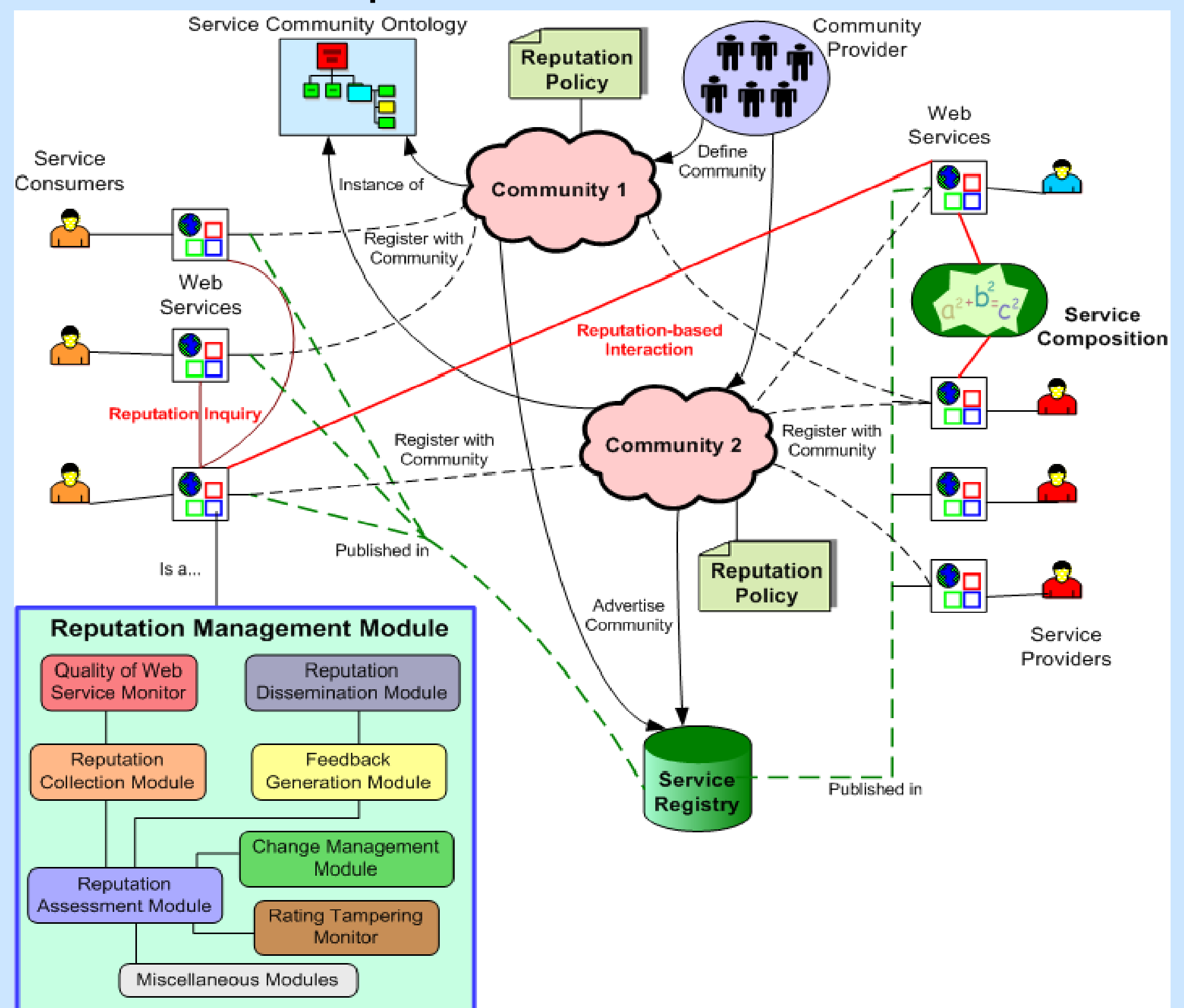


Reputation Model

We use reputation as a means to establish trust between *a priori* unknown Web services. The model is cooperative in that Web services share their experiences through feedback ratings, which are then used for reputation assessment in absence of any centralized trusted agency.

The service providers are rated along different Quality of Service (QoS) attributes (e.g., availability, reliability, accessibility, etc). Based on several metrics that we have defined, the service consumers *independently* aggregate the available ratings. This ensures that each consumer has a “local reputation view” of the providers.

An end-to-end solution that considers all facets of reputation management is proposed.



Approach and Impact

New approach

- Reputation Bootstrapping
- Rater Credibilities
- Reputation Metrics
- Reputation-based Selection

Research Impact

- Fairness for new service' selection
- Attenuation of effects of dishonest ratings
- Accurate reputation assessment
- Optimization of service selection

Technical Description

The proposed model is ratings-based. However, in situations where ratings are not available, we incorporate probability (using hidden markov models) to *predict* service reputation. Past ratings, rater's propensity to be dishonest and current ratings are used to estimate a rater's credibility, thus modifying the “majority is authority” rule, that is mostly followed in ratings-based systems.

The service space is organized using an ontology-based community model, in which consumers and providers are required to register with a community of interest. In assigning reputation to new services, we provide a solution that includes as a parameter the current rate of dishonesty in the community. For services that are part of compositions, we use two types of reputations: (i) individual-based (ii) composition-based.

Results

- Highly accurate reputation assessment of providers that is also fair to existing and new services
- Better results than similar state-of-the-art solutions
- Collusion/Bad mouthing are avoided
- In composition, the actual culprit is likely to get the blame