**Distributed ≠ Decentralized**

*Deriving new architectural styles for the Web that cope with uncertainty.*

Rohit Khare, Richard N. Taylor, *et al.* • Institute for Software Research • UC Irvine

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**IMPACT**

- Extend the Web to support **real-time** events
  
  REST architectural style only permits centralization
  
  - ARRESTED style adds **Asynchronous** notification, message **Routing**, **precise Estimators** for remote values, & **accurate** assessments using **Decision** rules.

- Support Internet-scale application integration
  
  *Software* running locally processes **facts**; the output of *Services* run by **others** is only their **opinion**.

  Such apps can tolerate slow, intermittent networks

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**NEW IDEAS**

- Consensus is expensive, if not impossible

  **Latency:** Network delays can make info ‘stale’
  
  **Agency:** Participants can’t always trust each other

- Instead, try coping **without** consensus:

  Today’s client/server styles rely on **ACID** agreement
  
  Atomic, Consistent, Isolated, Durable transactions

  Manage the risk of disagreement w/ **BASE** properties
  
  Best-effort networking, **Approximate** estimates

  **Self-centered** trust management, **Efficient** buffering

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**SCHEDULE**

- New open-source event router developed

  The `mod_pubsub` project was created by **KnowNow**, a startup spun off from our research at UC Irvine


- New theoretical model published

  Doctoral dissertation, papers, and technical report:
  
  *Extending the Representational State Transfer (REST) Architectural Style for Decentralized Systems*, 2003

  Available as ISR-03-08 from [http://isr.uci.edu/](http://isr.uci.edu/)