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## Asynchronous Communication

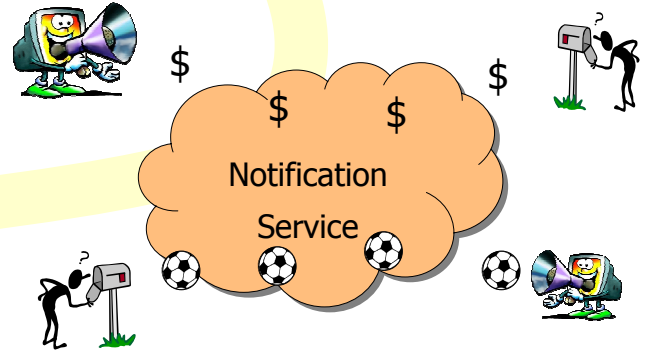
- Direct communication too inflexible
  - does not scale
  - does not evolve
- Hard-wired configuration does not adapt

## Application Examples

- Radio broadcasts, news ticker
- Financial information, monitoring in general
- Application integration

## Publish/Subscribe Communication

- *Producers* publish *notifications*
  - Not directed to any receiver
- *Consumers* subscribe for notifications
- Addressing: channels, subjects, content
- Characteristics:
  - Time decoupling
  - Space decoupling
  - Flow decoupling



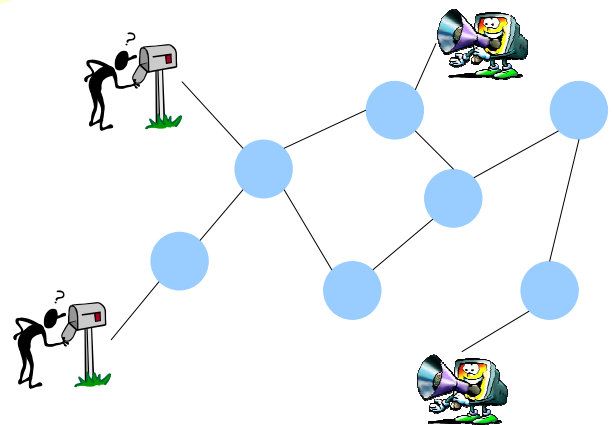
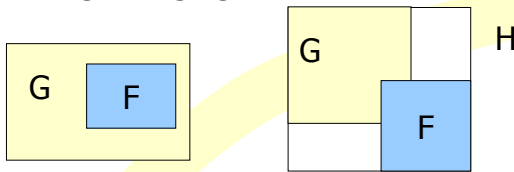
## Rebeca

- Generic publish/subscribe framework
- Distributed Notification Service
  - Network of brokers
  - Route notifications to subscribers

➤ <http://rebeca.sourceforge.net>

## Routing

- Content-based routing
  - Static network or dynamic peer-to-peer
- Covering, merging



## Involved Issues

- Routing efficiency
- Engineering of implicit interaction
  - Lost control
  - Increased inherent complexity
- System management
- Caching and data management
  - Notification lifecycle
- Fault tolerance
  - Link or broker failures and misbehavior
- Security

- Broker implementation
  - Diverse requirements, e.g., high efficiency, small footprint, etc.
  - Component-based broker implementation
  - AOP enabled modularization
- Quality of service
  - Guaranteed delivery
  - Real-time constraints