Caching of XML Web Services for Disconnected Operation

**Goal:** Run applications of XML Web Services on mobile devices with intermittent connectivity

**Assumptions:** Web Services are
- accessed via SOAP
- described by WSDL
- provided by third party
- hosted on Internet servers

**Approach:** Use cached responses when disconnected, queue requests for playback upon reconnection, and manage cache using annotated WSDL specs

**Issues:**
- Which responses are cacheable?
- Which requests are identical to previous ones?
- Which requests update server state?
- Which requests invalidate previously cached responses?
- How to generate responses for queued requests?
- How to support cache-aware applications?

**Sample WSDL Annotations:**
- `cacheable` - if request-response can be cached
- `key` - elements of request used for cache lookup
- `playback` - if request should be queued
- `cacheTransform` - invalidates/modifies cached responses
- `defaultResponse` - returned for non-cached requests
- `cacheHeader` - info attached to cached responses for application awareness

**Conclusion:** Disconnected operation through caching can be provided transparently for existing applications and Web Services

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See: http://msrweb/users/terry/marlin/
Internet Application
Annotated WSDL
Cache Manager
Request-Response Cache
Playback Queue
Proxy Server
Web Service 1
Web Service 2
Web Service 3
Mobile Device
Application
Internet