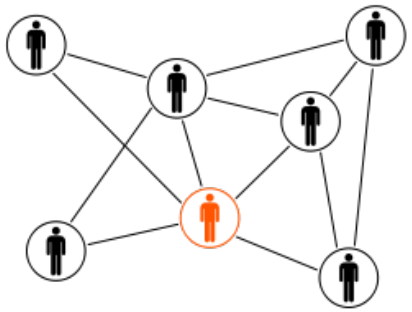
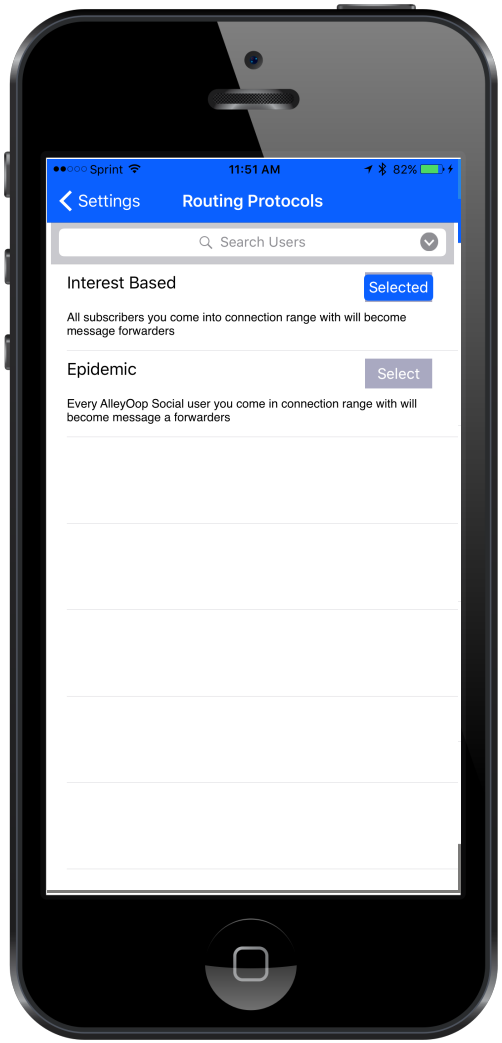
AlleyOop Social Research Platform

- A Low Latency Evaluation sYstem for ad-hOc Opportunistic Passing (AlleyOop Social)
- No jailbreak needed
- Capabilities
  - Online/offline social network
  - Publish/subscribe system
  - Disseminate messages using D2D connections
  - Secure message delivery
  - Can run multiple DTN wireless protocols
  - Link Facebook & Twitter accounts

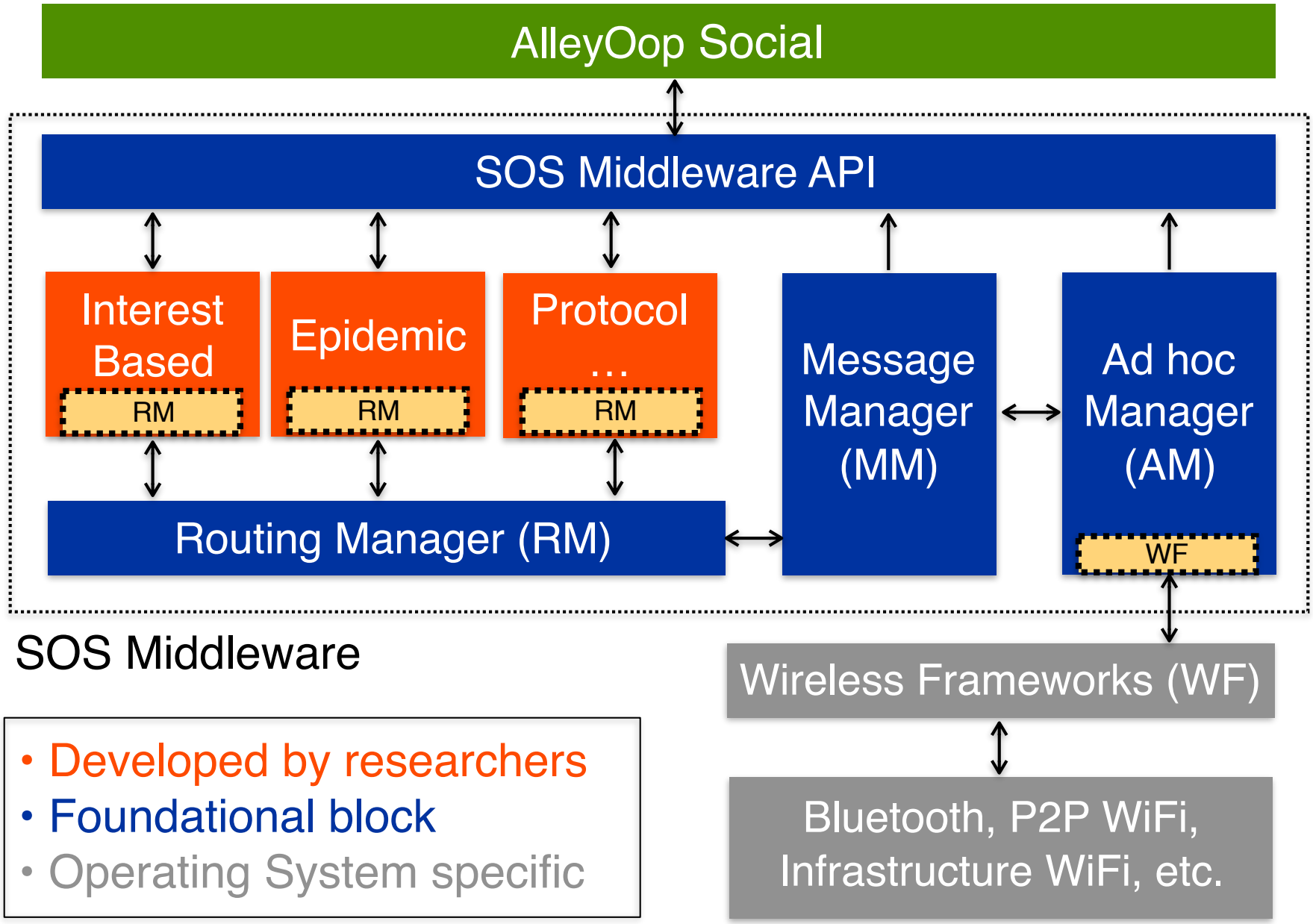




[1] **Baker CE** et. al, “In vivo evaluation of the secure opportunistic schemes middleware using a delay tolerant social network” 2017 IEEE ICDCS

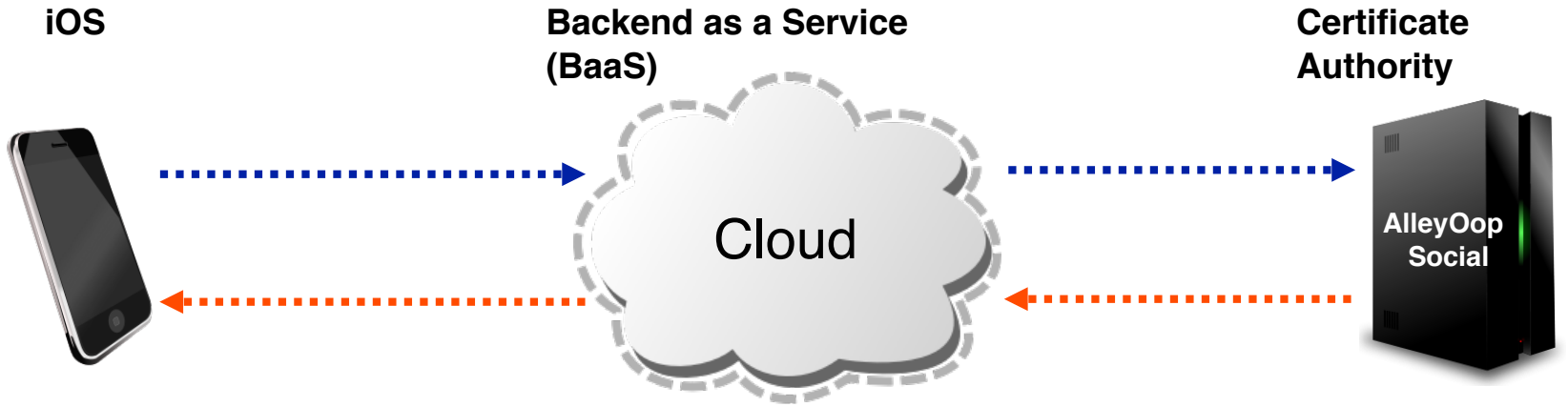
[2] **Baker CE** et. al, “A research platform for real-world evaluation of routing schemes in delay tolerant social network” 2017 IEEE INFOCOM

AlleyOop Social & Secure Opportunistic Schemes Middleware



- Developed by researchers
- Foundational block
- Operating System specific

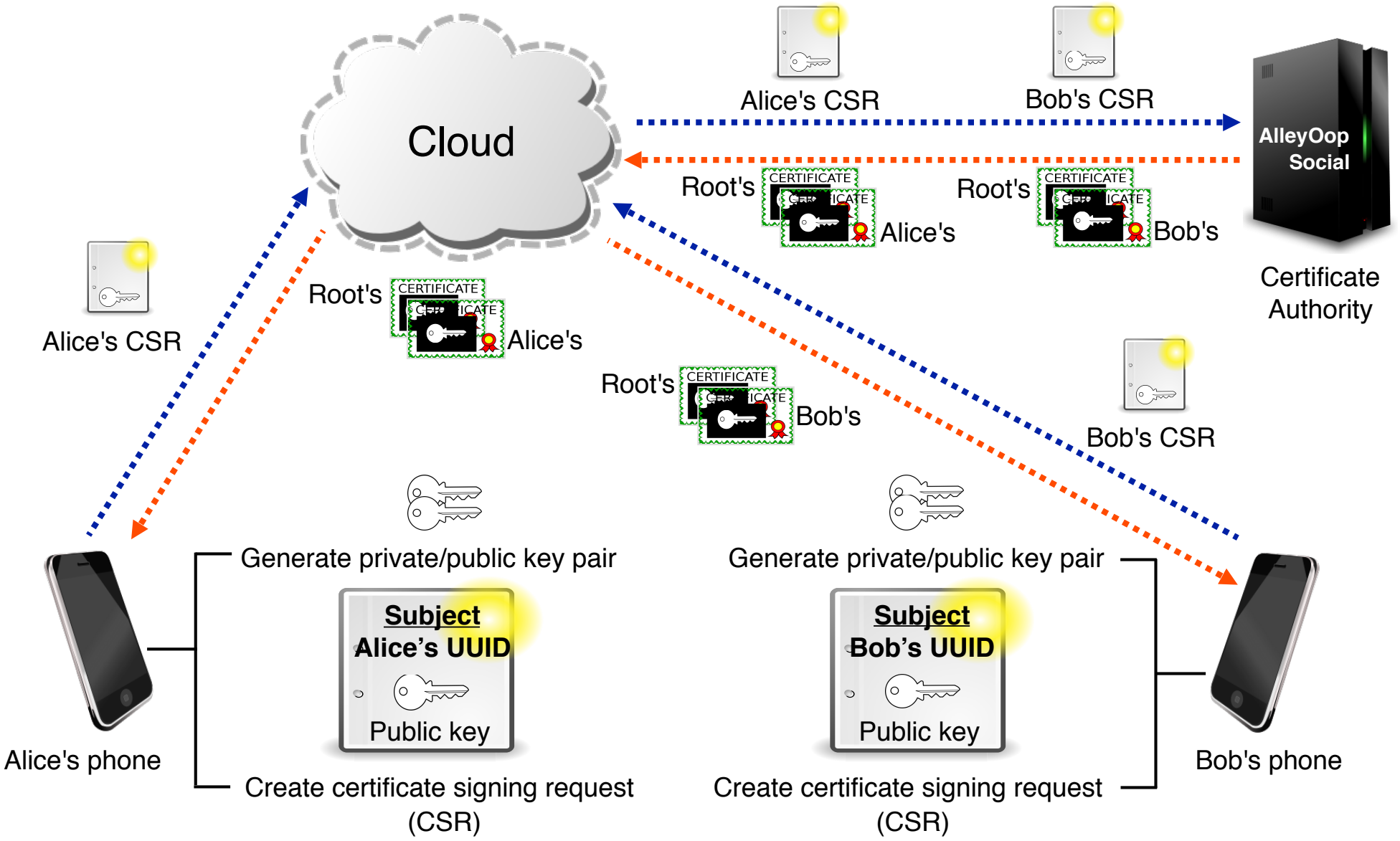
AlleyOop Social Architecture



Architecture & Capabilities

• iPhone, iPad, and iPod • Swift • SOS Middleware	• Cloud database management • Push notifications • App tracking analytics • Javascript	• Powered by nodejs • RESTfull API's • Openssl • Mysql • Javascript
Functionality		
• D2D: Bluetooth, P2P WiFI, Infrastructure WiFi • DTN Routing • Generate private/public keys & certificate signing requests • 16 simultaneous connections • Communicates directly to other mobile devices & BaaS	• Handles account creation for all users • Store all user info when cloud is available • Facilitates certificate creation and revocation • Communicates directly to mobile devices and AlleyOop Social Certificate Authority	• Creates certificates from certificate signing request • Stores certificate for each users mobile device • Communicates directly to BaaS

Enabling Offline Security: One-time Infrastructure Requirement



SOS Middleware Security

	Values
Key type	Elliptic curve (EC), RSA
Key size (bits)	**EC: 256** RSA: 512, 1024, 2048
Hashing algorithms	**SHA-256**, SHA-512, SHA-1024, SHA-2048

Note: bold is default