

Peter Froeberg

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<http://www.froeberg.com/resume/froeberg-resume.pdf>

Cupertino, CA

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Summary

- Highly creative senior engineer and manager with full stack experience
- Extensive experience in design and implementation of navigation and location based solutions
- Welcomes new and unsolved problems and updated approaches to old problems
- Special interest in solutions partitioned between mobile and cloud
- Experienced in managing senior engineering talent
- Excellent written and oral communication skills
- Comfortable with the challenge of developing with new and evolving technologies

Technology

- Experienced developer in Java, C/C++, Python and Javascript
- Eclipse, Xcode, Github, Jira, Confluence,
- Mobile platforms: Android, iOS, Pebble, QNX (BlackBerry 10), J2ME
- Cloud: Google App Engine
- UNIX: Mac OS X, Solaris, Linux, Digital Unix, HP-UX, AIX, BSD
- X11 (precursor to thin-client protocols such as VNC and MirrorLink™)
- Audio protocols: AMR, AMR-WB, SPEEX, AAC, MP3, OPA

Professional Experience

Senior Engineer *OT Mobility, Campbell, California*

2013 – Jan 2015

OT Mobility was a mobile startup which was conceived with the mission to help people arrive on time and happy everyday. [Spot On Time](#)TM was released for both the iOS and Android platforms in March.

Design and development for Google App Engine, Android, and Pebble watch for Spot On TimeTM mobile application.

Google App Engine development (Java)

- Developed REST services for the Spot On TimeTM mobile application (Android and iOS)
- Address and category searching
- Personalized reverse geocoding
- Developed parking search algorithm for destination context
- Implemented an optimized cluster algorithm for spatially grouping large numbers of search results for presentation in a mobile platform
- Built interface to MixPanel business intelligence analytics platform
- Built route and traffic analysis package to estimate fuel and CO₂ tradeoffs for various routes and times
- Designed and build service for Spot On Time Up NextTM in the Pebble App Store

Android development (Java)

- Developed Android code for GPS route tracking for the real-time Drive Plan and navigation displays for the Spot On TimeTM Android product.
- Developed the overlay traffic overlay for TomTom and Inrix traffic data
- Developed image and speech synchronization to our GAE cloud platform to enable remote update of graphical and audio resources.
- Developed the real-time interface from phone app to the Spot On timeTM Drive for PebbleTM found in the Pebble App Store.

Pebble watch development (C, JavaScript and Python)

- Responsible for all design and implementation of three Pebble applications as we sought to extend our mobile offering in the “wearable” space.
- Designed and developed Spot On Time DriveTM for Pebble to allow both schedule and turn-by-turn maneuvers delivered to the watch in real-time. Pebble app interfaces to Android or iOS companion app.
- Designed and developed watch face informing user of approaching departure time to schedule appointments. Calculations incorporate real-time traffic and parking. This app communicates to our GAE cloud services through Javascript running on the phone. This is designed to operate as a low-power Pebble watch face to be worn 24/7.
- Designed and developed application to display real-time travel time index and delay for nearby highways

Senior Technical Lead *Dash Navigation, Mountain View, California (a subsidiary of Research in Motion, AKA BlackBerry)*
2012 -- 2013
Routing and navigation for BlackBerry through real-time crowd-sourced traffic monitoring

BlackBerry 10 development (daily development C/C++ QNX, SQLite)

- Wrote GNSS collection service to opportunistically collect and upload vehicular traffic flow data in real-time
- Defined GNSS API elliptical accuracy specifications for geolocation APIs available for BlackBerry 10

Engineering Manager
2009 -- 2012

Back-end real-time services for BlackBerry Traffic app. Responsible for managing a team of senior engineers and scientists to provide mobile services to BlackBerry. All development in Java.

- Real-time traffic flow monitoring from en-route BlackBerry phones
- Historical traffic modeling using a Hadoop cluster
- Server generated traffic-based routing with TTS audio guidance
- Agile Java development using Eclipse, Jira, Pulse
- Data releases are validated by automated routing and guidance regression tests
- Responsible for employee reviews, group milestones, budgets, and coordinating with BlackBerry's GNSS development group in Canada

Voice guidance with Text-to-Speech (TTS)

- Design and implementation of turn-by-turn voice guidance in BlackBerry Traffic
- Conception, design, and implementation of algorithm to enable regionally correct pronunciation of street names and signage with Ivona's TTS engine.
- Special interest in voice recognition (ASR) as applied to address and place name entry

Director, Special Projects *Rand McNally & Company, Skokie, IL & Irvine, CA*

2000 -- 2009

iOS development (Objective C and SQLite)

- Designed and developed geography quiz application for Rand McNally entry into the new iPhone application market

Commercial truck routing (C/C++)

- Developed custom truck routing algorithm for commercial trucking applications
- Optimization of truck specific restrictions such as vertical clearance, weight, HAZMAT, and trailer configurations to provide the *most* legal and optimal route
- Developed and patented algorithm for detecting non-navigable road curvature

Consumer wireless products (J2ME)

- Created and implemented Rand McNally's *Mobile Travel Tools*, one of the first consumer wireless turn-by-turn navigational offerings and the first wireless product for Rand McNally.
- Deployed on J2ME/MIDP phones on the Nextel and Sprint networks
- Same J2ME code based certified on over a dozen Sprint handsets
- Nextel offering utilized the new Motorola i58 handset with SiRF GPS
- Leveraged Rand McNally's existing consumer web sever infrastructure
- Monthly subscriptions for Sprint were approximately 20,000 per month

Consumer web-based routing and directions for www.randmcnally.com (J2EE)

- Designed and implemented web hosted routing and directions
- Created single-line input parser for international addresses and POI
- DeCarta Drill Down Server (DDS)

Engineering Manager *Trimble Navigation, Sunnyvale, California*

1989 -- 2000

Software management and development for real-time vehicle tracking

Conceived, designed, and developed prototype portal as a new paradigm for fleet and asset management to provide detailed vehicle information in web-based report and map display format. (Java)

- Created communications cost models for this approach using a variety of communications options (GTE/WIN4, CDPD, control channel, etc.)
- Integrated map using DeCarta's Drill Down Server (DDS)
- Developed Java servlets and deployed on a Sun Ultra5
- Took initiative in persuading Trimble management to start to migrate from a vehicle hardware sales business model towards a fleet information services model. Trimble later acquired several companies based on this model

E911 Real-time vehicle tracking map display development (X11)

Hands-on development and management of a skilled team of motivated software professionals for the StarView Real-time map display and public safety GIS products. StarView operational in many mission critical E911 sites including Chicago, Houston, Phoenix, Boston, Irvine, Burbank, Chester County, and San Francisco. Installations ranged from a single-seat to 100+ dispatcher in the Chicago E911 Emergency Communications Center (CECC). Geographic data sources included Navteq (Nokia) and Tele Atlas (TomTom) often augmented with customer data.

- Hired and managed permanent and contract personnel for s/w development, testing and GIS
- Daily software development (C/UNIX)
- Department budgeting
- Project management
- Product release cycles (on Sun/Dec/HP/IBM platforms)
- Employee reviews
- Designed StarView Remote System Interface API for real-time fleet management and map display

Chicago CECC (E911) Project

This installation was part of a \$217 million project by Fluor Daniel. Responsible for delivering Trimble's component, which was \$2 million over an 18 month period. This included design documents, software development and services. Met or exceeded all deliverables which resulted in a high project margin for Trimble. Most importantly, this project put Trimble into a dominant position for deploying fleet management and dispatch installations in major cities throughout the US.

- Managed team of 6 senior engineers in development of real-time map display software (X11R5) and GIS data integration for Chicago's new CECC (E911 center)
- Incorporation of the City's GIS databases including vector street map, police and fire jurisdictions, hydrants, 900,000 building footprints
- Real time cartography requirements for the map display dictated sub two second map redraws at all stations. Deployment was on Dec Alpha OSF/1 (C/UNIX)

Polaris call center software

Polaris was a call center pilot project in New York for taking motorist's calls for driving directions, nearest auto teller, restaurant, etc. Each vehicle had GPS providing real-time positions over the cellular audio channel. Polaris was one of the first real-time GPS connected call centers and was later used as the model for Motorola's Onstar system. Special tasks included design and creation of Sybase database for real-time map display and geocoding the Nynex Yellow Pages for the five boroughs of New York.

Developed real-time map display for StarView/FleetVision for automatic vehicle location (AVL) and dispatch. Real-time vehicle reporting was over either trunked or conventional radio networks. Starting with the MinuteMan Courier installation in 1991, StarView enabled Trimble to deploy some of very first vehicle tracking and dispatch systems and helped accelerate the nascent AVL market in both the US and around the world.

Senior Systems Engineer *TAU Corporation, Los Gatos, California*

1982 -- 1989 Product development and implementation for commercial real-time imaging products

- Image analysis algorithms for image and video stream processing
- Real-time video identification and tracking system for robotic control and machine vision applications using TMS340 DSP and Sun/UNIX
- Automated X-Ray inspection digital imaging system

14 Issued Patents	8,693,458	Presenting Information at one or more mobile communication devices in a transportation network
	8,214,141	Route Evaluation System (cont.)
	7,580,791	Route Evaluation System
	7,003,112	Extensible GPS receiver system
	6,898,517	Vehicle-based dynamic advertising
	6,674,849	Telephone providing directions to a location
	6,553,313	Method and system for updating directed user-based dynamic advertising
	6,542,822	Directed user-based dynamic advertising
	6,233,517	Predictive model for automated vehicle recommendation system
	6,072,431	Extensible GPS receiver system
	6,043,778	Navigation system and orientation system incorporating solar sighting
	6,028,550	Vehicle guidance system using signature zones to detect travel path
	5,812,959	Automatic Vehicle Recommendation System
	5,625,668	Position reporting cellular telephone

Education

Bachelor of Science *University of California at Davis*
Geophysics

Other Interests

Jazz trumpet player
Soccer & cycling