

(12) **United States Patent**  
**Reed et al.**

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(54) **MOBILE WIRELESS DEVICE PROVIDING OFF-LINE AND ON-LINE GEOGRAPHIC NAVIGATION INFORMATION**

(58) **Field of Classification Search**  
 None  
 See application file for complete search history.

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(63) Continuation of application No. 16/557,277, filed on Aug. 30, 2019, which is a continuation of application (Continued)

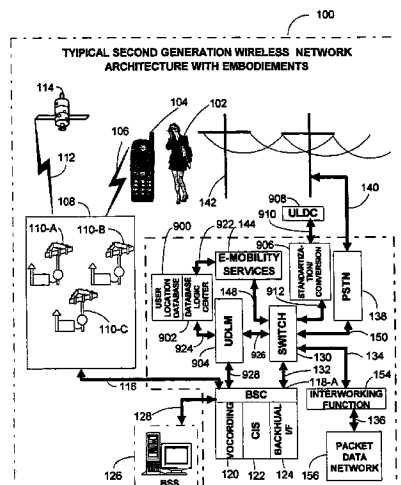
(57) **ABSTRACT**

(51) **Int. Cl.**  
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A mobile device, wireless network and their method of operation provide both on-line (connected) navigation operation, as well as off-line navigation from a local database within the mobile device. Routing according to the navigation system can be controlled by traffic congestion measurements made by the wireless network that allow the navigation system to select the optimum route based on expected trip duration.

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