

Patent Pipeline: Mobile Apps

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In *Terminator Genisys*, the fifth installment in the Arnold Schwarzenegger *Terminator* movie franchise, Kyle and Sarah time travel from 1984 to 2017 to stop Skynet. Upon arriving, one of their first observations is the ubiquity of smartphones. “Does everyone have one of these?” they ask. Well, yeah.



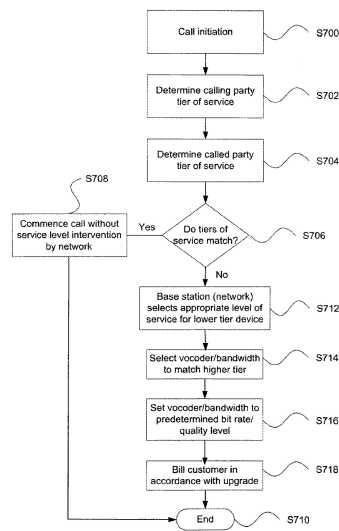
Remember looking for a pay phone to call the office? The original concept behind a mobile telephone was to give salespeople and repair technicians just that ability from remote locations. Like every other innovation, cellular technology has gone generations past its original concept. Mobile phones—or cell phones or smartphones—aren't limited simply to calls anymore. They are used for ecommerce, videoconferencing, email, as a datebook and calendar, and to store pictures, videos, recipes and multiple other items we just absolutely have to have at our fingertips. The reality is that there are many emerging technologies that will continue to expand uses for the smartphone over the coming years.

In this edition of *Patent Pipeline*, we look at recently patented technologies that represent the next generation of mobile telephone/cell phone/smartphone applications. In this installment, we will look at applications that will expand how we use our cell phones, while in our next installment we will address the hardware innovations that will change the appearance and configuration of our next smartphones.

Superior Cellular Telephone Service

U.S. Patent No. 9,763,132 for “Multi-Tier Quality of Service Wireless Communications Networks” is one of several patents assigned to Privilege Wireless, a company that is developing and commercializing the technology covered by an extensive portfolio. This patent has a 2008 Priority Date, was granted just last September, and is the latest patent in a portfolio of nine U.S. Patents and four European Patents. The invention covered by this portfolio is the creation of several levels of superior cellular telephone services for those who are willing to pay a premium for superior wireless service—thus the use of the term “privilege” in the name of the assignee of the portfolio.

When one subscribes to wireless services today, each subscriber gets exactly the same level of service as every other subscriber. Whether you are a corporate CEO, a high school student, a brain surgeon, or a senior citizen in a retirement home, you get the exact same level of service as everyone else. That means that when any portion of the cellular infrastructure goes down or call volume spikes—after a natural disaster, terrorist attack or other unique event, for example—call quality and response times decrease proportionally for all users across the network. This portfolio establishes carefully defined levels of service that a specific subscriber can sign up for—and, no doubt, pay a premium for—regardless of what happens to everyone else on the cellular network!



This figure from U.S. Patent No. 9,763,132 is a flow decision chart for processing calls by subscribers who have contracted for a superior level of wireless service. *(Click to enlarge)*

Smart Device-Enabled Electronic Testing

U.S. Patent No. 9,575,091 for a “Testing Device for Electrical Safety Using Wireless Communication” is held by independent inventor Kenneth Reeder. It has a 2013 Priority Date, the patent was granted in 2017, and it has 19 claims. This patent addresses a common problem. When an electrician, fire or building inspector, maintenance employee, electric utility worker, repair technician or other person is testing electrical wiring, the results appear on a tiny screen on the clamp tester, multimeter, megohmmeter, light fixture tester or other device the person is using. The person doing the testing has to either try to remember what the test reading was, or stop and write down the results. And if he or she is testing multiple devices, tracking and recording the results is not very efficient—and very messy!

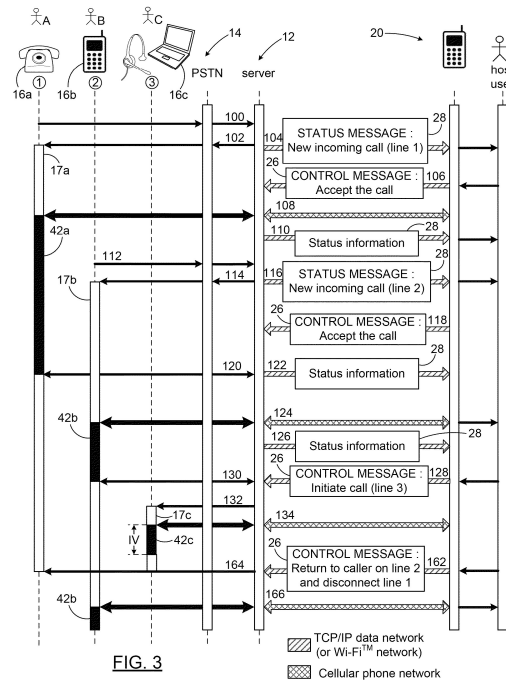
The invention covered by this patent solves that problem by sending the test results to a smartphone, where they are recorded and where they can also be viewed by others. For example, a technician can have his supervisor or service manager back at the office view the test results while the technician is still onsite to help him determine what the problem is and what needs to be done. The supervisor could even forward the test results to the device’s manufacturer if the test results need more in-depth interpretation. Test results can be stored to create a history for the device being tested, or fed into diagnostic software for in-depth analysis. The technology works for any smart device—a PC or tablet, for example—but a smartphone seems to be the most practical.

Multiple Call Sessions on a Single Cell Phone

U.S. Patent No. 9,049,696 for “Multiple Call Session System and Method for a Mobile Phone” comes to us from ProjectOne Solutions, a technology development firm in Montreal. This patent has a 2010 Priority Date, was granted in 2015, and has 19 claims. When one receives a cell phone, it comes with a single telephone number. And for most users, one phone line is sufficient. But for a small business that needs multiple lines, for example, it is impractical for the business owner to carry two or three cell phones around with him. The alternative is to make a considerable investment in a switchboard or PBX to handle multiple lines. This invention offers an affordable, adaptable and brilliant solution for multiple use cases, of which the small business example is one.

This patent details a technology that enables a single cell phone to handle multiple call sessions. It provides the capability to send and receive calls from multiple lines on a cellular phone, and enables the integration of these lines with a network-based phone system. It leverages the

strengths of cellular—for example, making and receiving phone calls remotely or while traveling—with the benefits of an advanced PBX. It enables one mobile phone to connect over a single cellular voice line to multiple phone devices through respective multiple lines, giving the user independent control of multiple call sessions on his or her phone. It also offers sharing of call sessions among several host mobile devices, and allows for modern social-style activity designed for voice.



This figure from U.S. Patent No. 9,049,696 is a sequence diagram showing how the host cell phone is integrated with other devices. [\(Click to enlarge\)](#)

Improved Gun Safety via a Smartphone

U.S. Patent No. 9,316,454 for a “Secure Smartphone-Operated Gun Lock with Means for Overriding Release of the Lock” is held by independent inventor Karl Milde. This patent has a 2013 Priority Date, was granted in 2016, and is the latest patent in a nine-patent portfolio that comprehensively addresses keeping a gun secure and out of the hands of an unauthorized user.

Regardless of one’s stand on gun rights, there is no debate that guns need to be kept out of the hands of any person who is not the rightful owner or an authorized user of the gun. This patent uses a smartphone as an “electronic key” to control use of a gun. Biometric data (a face image, iris image, voiceprint or fingerprint) is captured by a smartphone and transmitted to the gun lock. If it matches pre-stored data, the gun is unlocked, so only an authorized user can fire the gun. However, in the case of an emergency, the gun owner’s voiceprint commands can also lock or unlock the gun. The smartphone can be used as a key by an authorized user to control the gun, and additional smartphones can be used as keys by other authorized users.



Additionally, police officers can use a smartphone, for example, when the handgun is discharged. The smartphone sends the location, time stamps of shots fired and a request for backup. If a firearm is taken from a police officer, it is automatically disabled so the “bad guy” cannot use it to shoot the police officer or anyone else. The system can be configured so a gun is automatically locked in “safe areas” such as school zones and airports, and the system even includes a breathalyzer option so that even the rightful owner of the gun cannot use it if he or she is not sober.

Exponential Technology Growth for Smartphones

We can only wonder what Alexander Graham Bell imagined for his invention, or for its many possible future uses. His world was simply eons beyond ours in technology and its many applications. Yet, it's not only the applications but also the smartphone's looks that are changing. The next Patent Pipeline addresses what you might expect the next generation of our ubiquitous devices to look like.