

TOOLS of the TRADE



Apple iPhone 4

Apple's fourth-generation iPhone 4 features a number of radical changes to its basic design and technology. The rounded back has been replaced by a slim, rectangular, rounded-corner profile that has a glass front and back, and a stainless steel side rim serves as the antenna for the device. Kind of daring to make these design changes when you consider the phenomenal success of the previous versions. The next most obvious change is in the resolution of the screen. The 3.5-inch display has a resolution that exceeds that of most print materials at 960 x 640, which produces better than 320 pixels per inch. The display is nicknamed Retina, and it will provide brilliant e-book and Web

page renderings. There are two cameras on the iPhone 4. The one in the front (screen side) is set with the correct focal distance and angle for FaceTime calls, which transmit voice and the live image of the caller as he or she receives the image of the other party. The camera on the back is a five-megapixel still camera with flash. Add multitasking, HD video, talk time up to seven hours on 3G, Wi-Fi, Internet, and 200,000 apps, and this new version looks like a sure thing. It's available in black or white. www.apple.com

T-Mobile Garminfone

Garminfone from T-Mobile is an Android smartphone that has a fully integrated navigation system that offers driving, walking, and public transportation information. Garmin travel applications provide real-time traffic, weather, estimated time of arrival, and even current gas prices. The Garmin Voice Studio lets customers record voice directions from friends and family. Voice and onscreen turn-by-turn directions include automatic re-routing. Preloaded North American Maps have

almost six million points of interest. The 3.5-inch capacitive touch display has auto day and night modes for easier viewing. A window mount is included. The full-touch 3G smartphone offers access to personal and corporate e-mail, including Microsoft Exchange, contact and calendar, messaging, and full HTML Web browsing. The Android operating system provides support for a rich mobile Web experience with integrated Google Mobile services, including Google Search by voice, Google Maps, YouTube, and access to Android Market. There's a built-in three-megapixel autofocus camera with digital zoom and a music player.



A MicroSD slot for cards up to 32GB, built-in mini USB, and stereo BlueTooth expand the Garminfone's connectivity. The battery provides up to five hours of talk time and up to 10.4 days of standby time. <http://garminfone.t-mobile.com>

Kodak Playsport

The Kodak Playsport video camera has three outstanding features that set it apart. First, the camera is waterproof to a depth of 10 feet. So if at work you're the one they send out into the field on the days it's raining, or you've been known to drop expensive gadgets into the pool while on vacation, the Playsport can handle either of these. Another advantage is that the camera shoots HD video—a full 1080p resolution. It will also take still photos at a resolution of five megapixels. The HDMI cable will let you plug into your HDTV for direct replay. For better visibility outdoors, there's an LCD Glare Shield feature with two filters to choose from that help you see your subject on the display screen in reflective outdoor situations. These filters don't affect the image being recorded, just what you can see

TECH FORUM

Caffeinated Google

By Michael Castelluccio, Editor



now even in bright sunlight on the two-inch LCD display. The third feature is a built-in electronic stabilization system that takes the shake out of your videos. Other electronic aids that improve your skills are the smart face tracking technology and a low-light system that prevents washed-out colors. Built-in software and a USB connection make editing and uploading easy to YouTube, Twitter, and Facebook, as well as direct sending by e-mail. On-board memory is 128MB, and an SD/SDHC card expansion slot will handle up to an additional 32GB. Visit www.kodak.com and open the Kodak Store drop-down menu to digital video cameras.

Samsung SC-MX20

Samsung's SC-MX20 is a direct on-ramp to YouTube. The com-

pact camcorder is designed to simplify the process of taking and delivering content directly online to sites like YouTube via the USB 2.0 connection for your PC. There's also an AV out connection, and the MX20 records in two different aspect ratios, 4:3 and 16:9, to accommodate older TVs as well as newer wide-format HDTV screens. The external memory slot will accept both SD and MMC cards. You can record up to 16 hours on a 32GB memory card. There's an advanced image stabilization system to reduce image shaking, and the 2.7-inch LCD color viewfinder can be rotated to provide flexible shooting angles. 680K/800K pixel images are high-resolution, and the Schneider lens has a 34X optical zoom and 1200X digital zoom. The SC-MX20 is 2.38" x 2.36" x 4.92", and it weighs 0.60 pounds. www.samsung.com



The Google Search engine is an engineering marvel. Consider what it does. While continuously searching and indexing the content of the largest collection of human knowledge ever assembled, Google Search answers any and all queries about the collection and returns its responses in about half a second.

The adolescent technology, now 13 years old, was developed by Larry Page and Sergei Brin back in the late 1990s, and today it processes several hundred million queries every day. The searches can be simple text searches, requests for images, maps, up-to-date earthquake information—you name it.

If you know the keyboard shortcuts, there are more than two dozen specialized searches that are as close as the Google entry field. Say you don't know the area code for a phone number you're looking at. Key in the three numbers of the area code, and Google will return a map of the area covered by that code. Need a dictionary? Type in the word "define" followed by a colon and the word you want to look up. The words "Time Perth Australia" will return the current time in that city; "Chicago Cubs" yields current win/loss record, score of the last game, and the next game. Key in the words "population 07645" (that's the ZIP code for here in Montvale, N.J.), and you'll not only get the current population, but also five pounds of other demographics, including the most common occupations for males and the average snowfall for the area. The words "240 Euro in USD" will convert the cash you brought back from your last trip, and "weather 07645" will show you a four-day forecast for Montvale, N.J.

The keyboard shortcuts for these 28 specialized searches are explained at www.google.com/help/features.html. While you're at it, don't forget to check out the built-in calculator for Google. It can handle basic math as well as sophisticated formulas, all on the Google entry field. Just enter the problem, formula, or arithmetic

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string in the search field—no need to call up a separate page or device. You can get a quick review of the calculator at www.google.com/help/calculator.html.

Not only does Google Search map and manage the vastness of the Internet, but it also is quick—science-fiction quick. Think about someone going to the library to look up, say, Minimata. Once there, they pull out a card-catalog drawer, flip through the alphabet, note a long number on a piece of paper, close the drawer and wander up to the second floor, making left and right turns in the stacks, finally finding the number that's written down, and opening the book to the index looking for the place where the answer might be.

Now imagine a different approach. Enter "Minimata" in the Google search field, and click. In 0.26 seconds you have 281,000 results from worldwide sources (the figures are from the search I just did on the computer on which I'm writing this). And the most relevant stories, images, and videos are at the top of the list, sorted thanks to Google's Page Rank algorithm.

For those who think that computing has accelerated life to an unacceptably frantic pace, the alternative in the case above is that in the time it takes your friend to wander off to the library for some answers, you could have made your lunch, eaten your lunch, and then taken a nap out on the porch while waiting for your friend to go and gather some answers about Minimata—site of one of the worst environmental disasters of the 20th Century.

CAFFEINE INDEXING SYSTEM

Because the Web is in a constant state of flux, any service like Google Search would benefit from improvements that help it keep up. On June 8, Google announced on its official blog a new search index called Caffeine. The post explained, "Today, we're announcing the completion of a new web indexing system called Caffeine. Caffeine provides 50 percent fresher results for Web searches than our last index, and it's the largest collection of web content we've offered. Whether it's a news story, a blog or a forum post, you can now find links to relevant content much sooner after it is published than was possible ever before."

The Mountain View company said there were two reasons for this new system. One, the Web is becoming more complex as pages are enriched with content in many more formats than just text. And, second, "People's expectations for search are higher than they used to be. Searchers want to find the latest relevant content, and publishers expect to be found the instant they publish."

Caffeine will make the content on Google's index more contemporaneous. Or, as *PC World* characterizes it, the new system will be "closer to live than Google's previous system." The Google spiders that are constantly crawling the Web to gather new content are now not only smarter, but they are much faster. Matt Cutts, head of Google's Web team, told *PC World* the new search engine indexes the new content immediately: "We process it immediately so we can serve it seconds later." Areas where this will make the most difference will be news and the interactive content that drives sites such as Facebook and Twitter.

Cutts explained that in the early days Google would update its index every four months. In 2000, it shortened the schedule to every month, but the updates still took a week to 10 days to complete. And because the Google index lives on many different data centers, when you did a search, depending on which data center was processing your request, the return might be different from the same search done by someone in a different location.

The Caffeine system has been installed in all the Google data centers, and it will increase not only the speed, but also the amount of information the system can handle. "On the order of 100 petabytes," according to Cutts. A petabyte is "a unit of information equal to one quadrillion (short scale) bytes, or 1,000 terabytes" (Wikipedia). By comparison, Wikipedia writes, "Google processes about 24 petabytes of data per day, and AT&T has about 19 petabytes of data transferred through their networks each day."

In the June 8 blog, Google used several analogies to explain the change: "In fact, every second, Caffeine processes hundreds of thousands of pages in parallel. If this were a pile of paper it would grow three miles taller every second. Caffeine takes up nearly 100 million gigabytes of storage in one database and adds new information at a rate of hundreds of thousands of gigabytes per day."

The old engine was updated in layers, but the new approach strives for a global simultaneity. Google explains, "Our old index had several layers, some of which were refreshed at a faster rate than others; the main layer would update every couple of weeks. To refresh a layer of the old index, we would analyze the entire Web, which meant there was a significant delay between when we found a page and made it available to you. With Caffeine, we analyze the Web in small portions and update our search index on a continuous basis, globally."

The Caffeine blog ends with this assurance: "Look for more improvements in the months to come." **SF**