

Driven to Distraction

Case Studies



MetroLink

A commuter train engineer sent a cell phone text message 22 seconds before his commuter train crashed head-on into freight train in Southern California, killing 25 people, federal investigators said Wednesday.

Cell phone records of Robert Sanchez, who was among the dead, show he received a text message a minute and 20 seconds before the crash and sent one about a minute later, the National Transportation Safety Board said in a news release. The finding led Federal Railroad Administrator Joseph H. Boardman to announce an emergency order prohibiting use of personal electronic devices by rail workers operating trains and in other key jobs. The order must be published in the Federal Register to take effect. Spokesman Rob Kulat said that would happen "soon." California regulators have already enacted a ban.

Investigators are looking into why Sanchez ran through a red signal before the Metrolink train collided with a Union Pacific train Sept. 12 on a curve in the San Fernando Valley community of Chatsworth. The time of the final text suggests it is unlikely he had become incapacitated for some reason



American Airlines Flight 1400

Safety investigators traced a 2007 American Airlines engine fire to unapproved maintenance practices that eluded the carrier's quality assurance auditors, the National Transportation Board disclosed. The September fire happened shortly after American Airlines Flight 1400 departed St. Louis International Airport. The pilots returned to the airport without injuries or fatalities to any of the crew or 138 passengers.

Yet the pilots also prolonged the fire by failing to follow a checklist that leads them through the steps during such an emergency, the safety board said. Accident investigators said the crew became distracted and failed to quickly shut off fuel to the damaged engine, causing a loss of hydraulic pressure. That led to problems deploying the front landing gear. "It was a series of people taking short cuts that accumulated on this particular day into what could have been a much more catastrophic incident," said board member Kitty Higgins. "There was a host of serious problems that when you added them up all together could have been extremely catastrophic to the point where life could have been lost," acting board Chairman Mark V. Rosenker said. During the week before the accident, the jet's left engine failed to start on multiple occasions, the board said.

Mechanics repeatedly used an unapproved tool, such as a screwdriver, to open a valve that manually starts the engine, the board found. Boeing warned carriers in 1997 that using the wrong tool could deform a pin on the start valve. The damaged pin triggered a malfunction that sent sparks into the metal cover that contains the engine, where there was probably some kind of fuel leak, the board said. The safety board determined that American mechanics replaced the start valve six times but missed the cause of the failed engine starts: a worn out stainless steel air filter. American's audit team also failed to identify the cause of the problem, the NTSB said.

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NorthWest Flight 188



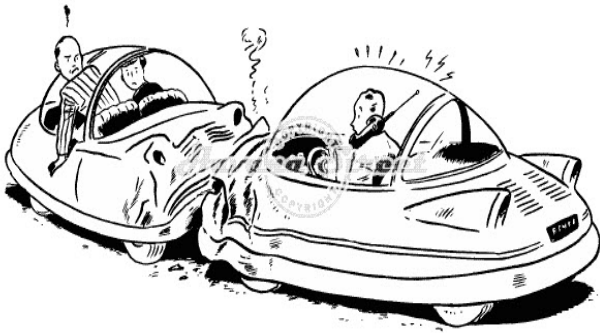
On Wednesday, October 21, 2009, at 1756 mountain daylight time, an Airbus A320, N374NW, operating as Northwest Airlines (NWA) flight 188, became a NORDO (no radio communications) flight at 37,000 feet. The flight was operating as a 14 Code of Federal Air Regulation Part 121 flight from San Diego, California (SAN) to the Minneapolis-St Paul International/Wold-Chamberlain Airport (MSP) with 5 crew members and 147 passengers.

At 1958 central daylight time, the aircraft flew over the destination airport and continued northeast for approximately 150 miles. The MSP center controller reestablished communications at 2014 CDT and the pilot stated "we got distracted and we've overflown MSP. We are overhead Eau Claire, WI (EAU) and would like to make a 180 [degree turn] and do an arrival from over EAU." At 2019, the controller asked the pilot to explain the cause of the situation to which the pilot replied, "just cockpit distraction, that's all I can tell you."

NWA188 was without communication with any ATC for a period of 91 minutes.

The pilots dropped out of radio communication on a 1,530 mile trip from San Diego to Minneapolis. The reason? They claimed to be on their personal lap tops reviewing schedules.

The relationship between cell phone use while driving and crashes ...



A recent national highway traffic study indicates that nearly 80% of crashes and 65% of near crashes involved some form of inattention within three seconds before the event.



In a case in Britain a young woman was found guilty and sent to prison even though she was not texting at the time of the accident, because the new guidelines regard "reading or composing text messages over a period of time" as "a gross avoidable distraction." Its effect, British judges have ruled, may go beyond the moment of composing a message. Such behavior is categorized the same as driving while drunk or high on drugs, as well as racing another driver.



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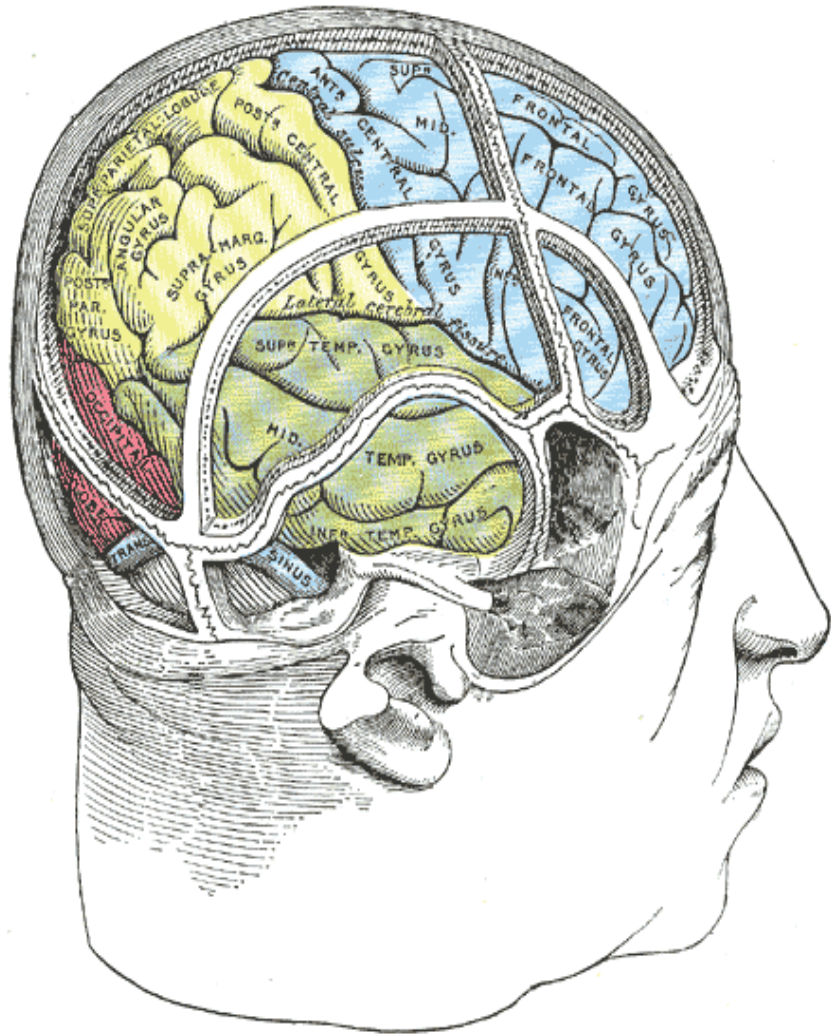
Whether people toggle between browsing the Web and using other computer programs, talk on cell phones while driving, pilot jumbo jets or monitor air traffic, they're using their "executive control" processes -- the mental CEO -- found to be associated with the brain's pre frontal cortex and other key neural regions such as the parietal cortex.

These interrelated cognitive processes establish priorities among tasks and allocate the mind's resources to them. "For each aspect of human performance -- perceiving, thinking and acting -- people have specific mental resources whose effective use requires supervision through executive mental control.

In four experiments, young adult subjects (in turn, 12, 36, 36 and 24 in number) switched between different tasks, such as solving math problems or classifying geometric objects. The researchers measured subjects' speed of performance as a function of whether the successive tasks were familiar or unfamiliar, and whether the rules for performing them were simple or complex. The measurements revealed that for all types of tasks, subjects lost time when they had to switch from one task to another, and time costs increased with the complexity of the tasks, so it took significantly longer to switch between more complex tasks.

Time costs also were greater when subjects switched to tasks that were relatively unfamiliar. They got "up to speed" faster when they switched to tasks they knew better, an observation that may lead to interfaces designed to help overcome people's innate cognitive limitations.

Executive control involves two distinct, complementary stages; goal shifting ("I want to do this now, instead of that") and rule activation ("I'm turning off the rules for that and turning on the rules for this.") Both stages help people unconsciously switch between tasks.



Rule activation itself takes significant amounts of time, several tenths of a second -- which can add up when people switch back and forth repeatedly between tasks. Thus, multitasking may seem more efficient on the surface, but may actually take more time in the end.

The dangers associated with multitasking mount quickly when complexity of tasks increase.

Factor in the criticality of functions in many jobs within the Aviation Industry and those half seconds of goal shifting and rule changing add up!

