

Countries consider time out on the 'leap second'

January 17 2012, By FRANK JORDANS , Associated Press



Time could soon be up for the leap second -- the extra moment added to universal time to keep it in sync with the earth's movement -- as experts consider abolishing it later this week.

It's high noon for the humble leap second. After ten years of talks, governments are headed for a showdown vote this week on an issue that pits technological precision against nature's whims.

The United States, France and others are pushing for countries at a U.N. telecom meeting to abolish the leap second, which for 40 years has kept computers in sync with the Earth day.

Leap seconds are necessary to prevent atomic clocks from speeding ahead of solar time. They are added at irregular intervals, effectively stretching atomic time by a heartbeat to make up for the irregular wobble in the Earth's rotation.

Critics warn that scrapping the leap second would break the last link between the passing of time and the course of the sun across the sky. But backers say machines shouldn't any longer be tethered to the imprecise cycle of sunrise and sunset.

"This would be an important decision because the problem of introducing the leap second would disappear and we would have a more steady time than we have today," Vincent Meens, an official at the International Telecommunication Union who has chaired technical talks on the issue, said Tuesday.

Operators of cell phone networks, financial markets and air traffic control systems could then rely on the near-absolute precision offered by atomic clocks without having to worry about stopping their systems for the length of a heartbeat every year or two.

"Most of the people who operate time services favor discontinuing leap seconds," said Judah Levine, a physicist at the National Institute of Standards and Technology in Boulder, Colorado.

"The main problem is that the leap second is usually implemented by stopping the clock for one second. However, the world doesn't stop," he said.

Satellite navigation systems like GPS don't use leap seconds, which adds confusion, said Levine. "In addition, the leap second occurs in the middle of the day in Asia and Australia, which is particularly inconvenient."

In a world increasingly reliant on computers for mission-critical measurements, any glitch could be costly as well as fatal, said Elisa Felicitas Arias, director of the time department at the Paris-based International Bureau of Weights and Measures.

"You can make a dramatic error if, for example, you are trying to land an aircraft," she said, noting that rocket launches, too, are never scheduled on days when a leap second might occur. "This is something we are trying to correct."

Critics say the risks are overblown and leap seconds have been used successfully since 1972, despite being hard to predict more than six months in advance.

China has warned that any change could hurt astronomers, who need to be able to compare observations spanning thousands of years as part of their work.

Canada, too, has raised objections to the proposed plan, while Britain has warned that it could spell the end of Greenwich Mean Time, or GMT, as a meaningful measure.

"Leap seconds are an inconvenience to the telecommunications people, but there are many other users of time who should be considered," said Ken Seidelmann, a research professor at the University of Virginia in Charlottesville and former director of astrometry at the U.S. Naval Observatory.

Killing off the leap second would also result in atomic clocks slowly outrunning the solar day by a rate of about 90 seconds a century. After many thousands of years, atomic clocks would say it's midday when outside the sun has yet to rise.

"This is replacing a small problem with a big problem further down the line," said Daniel Gambis, an astronomer at the Paris Observatory and the man who alerted timekeepers around the world to the next leap second, due on June 30.

Arias said solutions could be found for such problems, but conceded that severing the link between the proposed new standard time - as measured by atomic clocks - and the solar time people are accustomed to might seem troubling to many.

Still, the time for change has come, she argued.

Unless a last minute consensus is reached, delegates at the ITU meeting in Geneva are expected to vote on the issue Thursday or Friday.

©2012 The Associated Press. All rights reserved. This material may not be published, broadcast, rewritten or redistributed.

Citation: Countries consider time out on the 'leap second' (2012, January 17) retrieved 24 April 2024 from <https://phys.org/news/2012-01-time-up-for-the-leap.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--