



मराठी

04 April 2024

National and International News

White Rabbit Collaboration



Context:

- **CERN, the European Organization for Nuclear Research,** has recently introduced the **White Rabbit Collaboration**, a technology developed to synchronize devices in accelerators to sub-nanosecond precision.

Key points:

- **White Rabbit (WR) is a technology created at CERN** in partnership with various institutions and companies to synchronize devices in accelerators to sub-nanosecond precision, **addressing the challenge of establishing a common time reference across a network.**
- This technology, previously requiring specialized hard-wired timing systems, now provides **sub-nanosecond synchronization accuracy using White Rabbit Switches within real-time Ethernet networks, offering greater flexibility and modularity.**
- Initially deployed in **2012**, White Rabbit's application has extended beyond particle physics into various fields.
- It achieved a significant milestone in **2020 by being incorporated into the Precision Time Protocol (PTP), an international standard governed by the Institute of Electrical and Electronics Engineers (IEEE).**
- One of White Rabbit's notable features is its **open-source nature and adherence to standards**, enabling companies and institutions to customize it for their specific needs and integrate it into their products and systems.
- **White Rabbit is utilized not only in the field of finance but also in various research infrastructures.** It is currently being evaluated for potential use in the future quantum internet.



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Discovery of Ozone on Jupiter's moon

Context:

- A study conducted by an international team of scientists, with contributions from researchers in India, has resulted in the **detection of ozone on Callisto.**
- **This discovery sheds light on the moon's atmospheric composition and potential habitability.**

Implications

Ozone as Indicator of Atmospheric Stability:

- **The presence of ozone on Callisto suggests the existence of stable atmospheric conditions on the moon.**
- Ozone formation requires **specific chemical processes and stable environmental conditions, indicating potential habitable environments.**

Fundamental Ingredient for Life:

- **Oxygen, a component of ozone, is essential for the formation of complex molecules necessary for life.**
- The discovery raises questions about the habitability of Callisto and other icy moons in our solar system.

Insights into Geological and Atmospheric Processes:

- The discovery provides valuable insights into the **geological and atmospheric processes occurring on Callisto and other icy moons.**
- It enhances our understanding of the formation and evolution of Jupiter's moons.

Comparative Planetary Science:

- Comparing the chemical compositions and processes on different celestial bodies helps scientists better understand the similarities and differences between these moons and their potential habitability.

Callisto:

- Callisto, the farthest of **Jupiter's Galilean moons**, stands out as one of the solar system's most heavily cratered objects.
- Its surface is **dominated by impact craters of varying sizes**, indicating a lack of substantial geological activity.
- Composed mainly of **water ice and rocky material**, Callisto is believed to possess a **subsurface ocean, though it is suspected to be in contact with a rocky core rather than being heated by tidal forces.**



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<p>Digital India Trust Agency</p>	<p>Context:</p> <ul style="list-style-type: none">• The RBI is planning to establish the Digital India Trust Agency (DIGITA) to combat illegal loan apps. <p>Key points:</p> <ul style="list-style-type: none">• DIGITA, part of RBI's DIGITA initiative, collaborates with tech giants to enhance digital lending safety.• It verifies apps, removes suspicious ones, and works with the IT Ministry to whitelist legitimate loan apps.• RBI's DIGITA initiative aims to ensure the safety of digital lending by verifying and removing suspicious loan apps.• DIGITA acts as a central hub for vetting digital loan apps, ensuring compliance with regulations and ethical operation.• Only verified apps receive a "DIGITA-approved" seal, making them easily identifiable for borrowers.• Unauthorized apps without DIGITA's verification may face penalties, enhancing the safety of borrowers.• RBI is already working with the government to address the issue.• It has shared a list of 442 legitimate loan apps with the IT Ministry for whitelisting on app stores like Google Play.• This collaboration has led to the removal of over 2,200 suspicious lending apps by Google in the past year.• These efforts aim to create a safer and more transparent digital lending ecosystem for Indian consumers.
<p>Bridge fuel</p>	<p>Context:</p> <ul style="list-style-type: none">• Natural gas has been termed a 'bridge fuel' for nations seeking to move away from coal and oil dependence towards renewables and electrification.• It is considered cleaner than other fossil fuels, especially coal, as it emits 50% less CO2 into the atmosphere. <p>Key points:</p> <ul style="list-style-type: none">• The Intergovernmental Panel on Climate Change has stressed the urgency of phasing out coal over reducing gas usage for the 1.5°C pathway, which is challenging for coal-dependent Global South countries.• The aim of using a bridge fuel is to replace current fossil fuel-dependent energy sources as we move towards a cleaner, more renewable energy economy without greenhouse gas emissions.• The duration of this transition and the choice of energy source for the bridge are subjects of debate.• Natural gas is a bridge fuel because it produces fewer greenhouse gases during combustion. However, other factors to consider for a bridge fuel include its impact on national energy independence and its ability to reduce pollution-related costs. <p>Read more about the Natural Gas and its properties.</p>



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First Tri-service Common Defense Station

Context:

- The Indian Armed Forces are planning to establish **Mumbai as India's first "tri-service common defense station"** for the Army, Navy, and Indian Air Force (IAF) to enhance jointness among the services.

Key points:

- This initiative aims to **integrate logistics, infrastructure, and administration, which are currently operated separately by the three services in Mumbai.**
- Currently, India lacks common defense stations, with the Andaman and Nicobar command being the only existing tri-service command since 2001.
- **Mumbai will be the first common defense station, with Sulur and Guwahati** potentially being chosen as locations for the second and third stations, with different lead services for each.
- This initiative aligns with the broader goal of integrating the three defense services in India through various measures:

Integrated Theatre Commands (ITCs): Establishment of unified commands under a single commander for strategic geographical theatres involving the Army, Indian Air Force, and Navy.

Office of the Chief of Defense Staff (CDS): Centralized leadership responsible for fostering coordination and synergy among the three services.

Cyber and Space Commands: Integration of capabilities in cyber warfare and space operations across the defense services.

Resource Sharing: Pooling and sharing of resources among the services to avoid duplication and enhance efficiency.

Joint Training and Exercises: Conducting combined training programs and exercises to enhance interoperability and cohesion among the forces.

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