National e-Governance Service Delivery Assessment (NeSDA)

Context: DARPG has issued the 5th edition of 'NeSDA - Way Forward Monthly Report', detailing e-service delivery status across States/UTs.

e-Services

- 13,867 e-services offered, up by 6.3% from last month.
- 1,397 out of 2,016 mandatory e-services available (69% saturation).
- Most e-services (5,203) in Local Governance & Utility Services.
- 58% States/UTs achieved saturation in Tourism sector.

Education Sector e-Services

- 911 e-services in Education.
- Sub-themes: Document Management (297), Institute Support (297), Scholarships (202), Regulation (78), Other (37).
- Madhya Pradesh leads with 122 e-services, followed by Karnataka (113), Kerala (92).
- Karnataka offers most distinct e-service types (21).

Best Practices

- **Gujarat's G-Shala**: LMS with e-Content (Grade I-XII).
- **Madhya Pradesh**: 100% seat allotment via online RTE portal.
- **Nagaland**: Common Scholarship portal for State Scholarships.
- **Himachal Pradesh**: Online admission for Polytechnic/ITI via HPTech Board portal.
- **Karnataka**: Digitized state exams through Assessment Board portal.

NeSDA

- The assessment is conducted periodically to enhance the effectiveness of online service delivery by States, Union Territories, and the Central Government to citizens.
- The Ministry of Personnel, Public Grievances and Pensions is responsible for releasing this assessment.
- The evaluation covers both service portals and the relevant parent Ministries/portal Departments.
- In 2021, the Department of Administrative Reforms and Public Grievances (DARPG), in collaboration with knowledge partners NASSCOM and KPMG, conducted the assessment.
- This evaluation is known as NeSDA (National e-Governance Service Delivery Assessment).
- First edition was launched in 2019.
- Notably, the recent edition released in July represents the fifth instalment of NeSDA.

MeitY-NSF Research Collaboration

Context: India and the United States have introduced their inaugural joint call for proposals as part of the MeitY-NSF research collaboration.

- Ministry of Electronics and Information Technology (MeitY) has announced the first Joint Call for proposals under the MeitY-National Science Foundation (NSF) research collaboration.
- MeitY and NSF signed an Implementation Arrangement (IA) on Research Collaboration in May 2023.
- This collaboration aims to promote discoveries and innovations in areas of mutual interest, aligning with the Joint Statement by the governments of India and the United States during Prime Minister Shri Narendra Modi's visit to the US in June 2023.
- The 1st Joint Call for proposals will focus on semiconductor research, next-gen communication technologies, cybersecurity, sustainability, green technologies, and Intelligent Transportation Systems.
- Proposal submission begins on August 21, 2023, and the last date is January 5, 2024.
- The collaboration aims to advance technology through prototypes, pilot scale demonstrations, field deployment, and technology transfer.
- Teams from the US and India are encouraged to partner with testbed providers, local communities, and industry partners to ensure project success.

NSF

- The National Science Foundation (NSF) is an independent US federal agency supporting fundamental research and education in various scientific and engineering fields, excluding medical research.
- It operates with an annual budget of around $8.3 billion (fiscal year 2020) and funds about 25% of federally supported basic research conducted by US universities and colleges.
- The NSF is a major source of federal funding for disciplines like mathematics, computer science, economics, and social sciences.
- The NSF director and deputy director are chosen by the US president, and their roles encompass administration, budgeting, and day-to-day operations.
- The National Science Board (NSB), comprising 24 president-appointed members, establishes overall policies and meets six times a year. Senate confirmation is not needed for NSB members.

- The current NSF director is Sethuraman Panchanathan.

Indo-U.S. Science and Technology Forum (IUSSTF)

- Indo-U.S. Science and Technology Forum (IUSSTF) established in March 2000 through an agreement between India and the U.S.
- Autonomous bilateral organization jointly funded by both governments.
- Aims to boost Science, Technology, Engineering, and Innovation through government, academia, and industry interactions.
- Nodal departments: Department of Science & Technology (India), U.S. Department of State.
- Envisions excellence in Science, Technology, and Innovation via collaborative initiatives.
- Facilitates long-term scientific partnerships, connecting individual scientists, institutions, and communities.
- Promotes scientific cooperation and research exchange between India and the U.S.

Acoustic Cryptanalysis

Context: A study titled "A Practical Deep Learning-Based Acoustic Side Channel Attack on Keyboards" demonstrates that Artificial Intelligence (AI) can decode passwords by analysing keystroke sounds.

- Acoustic cryptanalysis is a form of side channel attack that capitalizes on sounds emitted by devices like computers.
- This method primarily targets sounds generated by computer keyboards and internal components.
- Historically, acoustic cryptanalysis has been used with impact printers and electromechanical deciphering machines.
- Technique Exploiting Keyboard Sounds
  - Utilizes sounds produced while typing on a keyboard to deduce pressed keys.
  - Hackers can decode specific letters and numbers by analyzing these distinct sounds.
- ASCA Attacks Using Various Sources
  - Researchers employed audio recordings from Zoom calls, smartphone microphones, and common equipment and algorithms for ASCA attacks.
  - Investigated method's effectiveness across different audio sources.
- High Accuracy with Nearby Phones
  - The study discovered that training the classifier with keystrokes from a nearby phone resulted in an impressive 95% accuracy.
  - This accuracy was achieved without utilizing a language model, marking a high accuracy achievement.
- Deep Learning Model Success
  - When a deep learning model was trained with default settings, it effectively interpreted the data.
  - On a MacBook Pro with a keyboard design similar to recent Apple models, the model achieved remarkable accuracy with minimal training data.
- Smartphone Microphone Recognition
  - The AI model, when trained to recognize keystrokes from audio recorded through smartphone microphones, achieved an impressive 95% accuracy.
- Significant Implications
  - This hacking method has the potential to expose sensitive information like passwords and personal messages.
  - The technique poses risks to data security and user privacy.

Side Channel Attacks (SCAs)

A side-channel attack is a security exploit that gathers information from a system by using indirect effects of its hardware rather than targeting the program directly. These attacks aim to access sensitive data, like cryptographic keys, through unintended hardware emissions. They are sometimes known as sidebar attacks or implementation attacks.

Types:

- **Electromagnetic:**
  - Attacker measures electromagnetic radiation emitted by a device to reconstruct internal signals.
  - Early side-channel attacks, like van Eck phreaking, focused on electromagnetic methods.
  - Modern attacks measure cryptographic operations to derive secret keys.
  - Software-defined radio (SDR) devices facilitate electromagnetic attacks even through walls.
- **Acoustic:**
  - Attacker captures sounds produced by a device.
  - Proof-of-concept attacks reconstruct keystrokes from audio recordings.
  - Hackers can gather information by listening to electronic component sounds.

- **Power:**
  - Hacker measures or influences power consumption to infer device activity.
  - Monitoring power use and timing reveals system behavior.
  - Attacks may manipulate power to benefit the attacker, similar to Plundervolt.
- **Optical:**
  - Attacker uses visual cues for system information.
  - Rarely used against computers; can reconstruct audio from vibrating objects.
  - Simple shoulder surfing attacks may also fall under this category.
- **Timing:**
  - Attacker uses operation time to gain insights.
  - Comparing operation times between systems for accurate predictions.
- **Memory Cache:**
  - Attacker exploits memory caching and pre-fetching.
  - Abusing caching for unauthorized access; Spectre and Meltdown vulnerabilities exploited this.
- **Hardware Weaknesses:**
  - Hackers induce behavior using physical system characteristics.
  - Row hammering attacks flip nearby memory areas; ECC memory can prevent.
  - Cold boot attack involves lowering RAM temperature to retain information after power removal.

NEWS IN BETWEEN THE LINES

Kerala Fiber Optic Network Project

What is Krala Fiber Optic Network Project?
- KFON is a significant initiative launched by the Kerala government.
- Aimed at providing internet connectivity to a wide range of citizens, including those below the poverty line (BPL) and the general public.

Launch and Timeline:
- The project was launched in the year 2019.
- The first phase of the project was commissioned in June 2023.

Objective:
The primary goal of KFON is to bridge the digital divide by ensuring affordable and accessible internet connectivity for all sections of society.

Target Beneficiaries:
The project focuses on providing free internet access to 20 lakh (2 million) families below the poverty line (BPL) in the state.

TANSCHE

TANSCHE stands for "Tamil Nadu State Council for Higher Education." It is an autonomous body established by the Tamil Nadu government in 1992 with a mandate for 1 5 members.

Function: Coordinates education programs and partnerships among institutions.

Aim: Its aim to enhance higher education and research in Tamil Nadu.

Autonomy vs. Uniform Syllabus:
- TANSCHE initially promoted a "uniform syllabus" for colleges.
- Autonomous colleges allowed to opt out of the uniform syllabus.

Uniform Syllabus Dispute:
- Proposed uniform syllabus faced resistance from faculty and vice-chancellors.
- Lack of thorough consultation raised concerns.

Government's Responsibility:
- Government's role in ensuring TANSCHE's effective functioning.
- Rebuilding trust in TANSCHE's relevance is vital for higher education improvement.

Madras Day

Madras Day is an annual event celebrated on August 22nd in Chennai, India. It commemorates the founding of the city in 1639 when the English East India Company acquired land on the Coromandel Coast.

Name Change to Chennai:
- Renamed Chennai in 1996 to reflect its Tam il heritage.
- Derived from the name of Chennapatnam, a fishing village near Fort St. George.

Historical Background:
- Established as a trading post by the British East India Company.
- The establishment of Fort St. George marked the beginning of the city.

Founder's Arrival:
Francis Day arrived in a ship called 'The Eagle' in 1639, leading to the city's founding.

Diverse Cultural Heritage:
Celebrates the rich cultural history of Madras, including British, Dutch, and Portuguese influences.

Yasuni National Park

Geographical Location:
- Yasuni National Park is located in **Ecuador's Amazon** rainforest region.
- Situated in the western part of the country.

UNESCO Biosphere Reserve:
- Designated as a world biosphere reserve by **UNESCO in 1989.**
- Acknowledged for its ecological importance and efforts in balancing conservation and sustainable development.

Biodiversity Hotspot:
- Yasuni is renowned as one of the most biodiverse regions globally.
- Home to an incredible variety of plant and animal species.

Flora and Fauna Diversity:
- Houses approximately 610 bird species, 139 amphibian species, and 121 reptile species.
- Supports diverse ecosystems including tropical rainforests and wetlands.

Indigenous Communities:
- Yasuni National Park is inhabited by indigenous tribes including the **Tagaeri** and **Taromenani**.
- These tribes often choose to live in self-isolation, preserving their traditional way of life.

Global Climate Impact:
Yasuni's preservation contributes to global climate goals by protecting carbon-rich ecosystems.

The1918 Influenza Virus

What is the 1918 Influenza Virus?
- The 1918 Influenza Virus, commonly known as the Spanish flu, was a severe and deadly strain of influenza that caused a global pandemic between 1918 and 1919.
- It is considered one of the most devastating pandemics in history due to its widespread impact and high mortality rates.

Characteristics of the 1918 Influenza Virus:

Origin: The exact origin of the virus is still debated, but it was named "Spanish flu" because early reports of the pandemic came from Spain, which was neutral in World War I and thus had less censorship of news.

Virus Type: The virus responsible for the pandemic was an H1N1 influenza A virus.

Severity: The 1918 flu pandemic was unusually severe, affecting all age groups, with young adults particularly vulnerable.

Transmission: It spread through respiratory droplets and was highly contagious.

Global Spread: The virus spread rapidly due to the movement of troops during World War I.

Mortality: The mortality rate varied, but in some cases, it reached much higher levels than typical seasonal influenza. The virus caused an estimated 50 million deaths worldwide.

Yellow Sally Insect

What is Yellow Sally Insect?
The Yellow Sally is a common name used to refer to a group of aquatic i nsects belonging to the stonefly family Perlodidae, particularly species within the genus Isoperla.

Characteristics:

Appearance:
- Yellow Sallies typically have yellow to olive-yellow bodies, which gives them their common name.
- They have two pairs of wings, long antennae, and prominent cerci (tail-like appendages) at the end of their abdomen.

Size: They are relatively small insects, usually ranging from about 6 to 15 millimeters in length.

Habitat: They prefer clean and clear flowing waters, including rivers and streams, where they spend most of their life stages.

Conservation Efforts:
- Scientists initiated a rescue mission to save the insect.
- Successful breeding in captivity at Chester Zoo is a significant achievement.

Rare Rarity - Scarce Yellow Sally:
- The insect, Isogenus nubecula, was occasionally found in British rivers between 1959 and 1995.
- Reappeared in 2017 in a short stretch of River Dee near Wrexham.

Personality in News

Sheela Asopa

Sheela Asopa is a notable educator and water conservationist based in Rajasthan, India.

Leadership in Education:
- Served as the principal of various schools in Jodhpur district, Rajasthan.
- Introduced innovative initiatives to enhance stu dents' involvement and awareness.

Initiative: Jal Sansad (Water Parliament):
- Pioneered the concept of "Jal Sansad" in mid-2022 at Shyam Sadan School.
- Created a student-led platform for water conservation activities.

Spread of the Initiative:
- Extended the Jal Sansad initiative to multiple schools across Jodhpur district.
- Promoted the active participation of students in water conservation.

Recognition and Awards:
- Received the prestigious National Water Award from the Union Ministry of Jal Shakti in June 2023.

Places in News

Trinidad and Tobago

Geographical Location:

- Situated in the southernmost part of the Caribbean Sea.
- Off the northeastern coast of South America.

Geographical Components:

- Comprises two main islands - Trinidad and Tobago.
- Several smaller islands are part of the country's territory.

Capital City:

- Port of Spain: Capital of Trinidad and Tobago.
- Located on the northwest coast of Trinidad.

Physical Features:

Northern Range: Mountain range along the northern coast of Trinidad.

Central Plains: Flatlands with agricultural activities.

Caribbean Sea Access:

- Access to the Caribbean Sea with potential maritime activities.
- Coastal regions important for fishing and tourism.

POINTS TO PONDER

- **What is the name of the landing crater near the northeast limb of Moon?** – Hayn
- **Which are the countries bordering the North Sea?** – Great Britain, Denmark, Norway, Germany, the Netherlands, Belgium and France
- **Which are the two sister cities of Chennai?** – Denver and San Antonio
- **Tagaeri and Taomenani are the tribes of which country?** – Ecuador
- **Who has become the 1st Indian to Enter the FIDE World Cup finals since the knockout format has been introduced?** – R. Praggnanandhaa