

SCIENCE AND TECHNOLOGY

Context: Massive Aadhaar data breach, government initiatives and policies for development across a range of industries, and problems resulting from their conception and execution.

Why in News?

- Recently, 815 million Indian Citizens' Personally Identifiable Information (PII), including Aadhaar numbers and passport details, were reportedly being sold on the Dark Web, according to Resecurity, an American cyber security company.
- The Indian Council of Medical Research (ICMR), which has been the target of multiple cyber attack attempts with 6,000 incidents reported in 2022, was cited as the source of the data by the threat actors selling it.

What is the Dark Web?

- The term "dark web" describes websites that are only viewable through specialized web browsers and are not indexed. Considered a component of the deep web, the dark web is much smaller than the microscopic surface web.
- The dark web would represent the lowermost portion of the submerged iceberg in our ocean and iceberg metaphor.
- The dark web is a part of the internet that is not readily accessible to the average user because it is purposefully hidden and requires special software, configurations, or authorization to access.



What is Personally Identifiable Information, and how was sensitive data obtained by threat actors?

- About Personally Identifiable Information (PII): PII is any data that, when combined with other pertinent information or on its own, can be used to identify a specific person.
- PII can be quasi-identifiers that can be used in conjunction with other data to successfully identify an individual or direct identifiers like passport information.

Sensitive Data Access:

- Threat actors offering stolen data for sale on the dark web refused to say how they got the information, making it impossible to pinpoint the source of the leak without further information.
- The second threat actor discovered selling data on the internet, Lucius, asserted to be in possession of a 1.8 terabyte data leak that affected an unidentified "India internal law enforcement agency." But the claim hasn't been verified yet.

- Researchers noticed that several references to voter ID cards, Aadhaar cards, and UIDAI (Unique Identification Authority of India) cards were found in the data samples they examined. It is also conceivable that threat actors were successful in breaking into a third party that was compiling these particulars.

Risks Associated with Information Leaks:

- According to a Resecurity survey, India, one of the world's economies with the fastest rate of growth, placed fourth in the world for all malware detection in the first half of 2023.
- Digital identity theft is becoming more likely due to the instability in West Asia and the rise in attacks by hostile actors who take advantage of the chaos to reveal personally identifiable information.
- Threat actors use identity theft to perpetrate tax fraud, online bank fraud, and other financial crimes made possible by cyberspace.

What are the Previous Instances of Data Breach?

- There have also been reports of Aadhaar data leaks in 2018, 2019, and 2022. Three major leaks have been documented, one of which involved the release of farmer data from the PM Kisan website onto the dark web.
- Reports surfaced earlier in 2023 indicating that Indian citizens who registered with the Covid-19 vaccine intelligence network (CoWIN) portal had their personal information returned by a bot on the messaging app Telegram.

What are the Indian Provisions Concerning Data Governance?

- The IT Amendment Act of 2008: Current Privacy Provisions India has implemented certain privacy regulations through the IT (Amendment) Act, 2008.
- These rules, however, are mostly limited to particular circumstances; for example, they prohibit the media from releasing the identities of minors and rape victims.

Union of India v. Justice K. S. Puttaswamy (Retd) 2017:

- In Justice K. S. Puttaswamy (Retd) Vs Union of India, decided in August 2017, a nine-judge Supreme Court bench unanimously ruled that Indians have a fundamental right to privacy guaranteed by the Constitution, which is an essential component of life and liberty under Article 21.

2017's B.N. Srikrishna Committee:

- In August 2017, the government established a committee of experts on data protection, chaired by Justice B N Srikrishna. The committee turned in its report and a draft data protection bill in July 2018.
- Numerous recommendations are made in the report to improve India's privacy laws, such as data localization, the Data Protection Authority, the right to be forgotten, and limitations on data processing and collection.
- Information Technology (Digital Media Ethics Code and Intermediary Guidelines) Regulations 2021
- IT Rules (2021) require social media companies to be more careful about the content that appears on their platforms.

The Way Ahead

- To improve security and privacy, the UIDAI advises utilizing "masked Aadhaar," which only shows the last four digits of the Aadhaar number.
- Furthermore, the Aadhaar Act ought to be modified in order to restore independent oversight in the form of a strong "Identity Review Committee" in order to guarantee accountability.
- The government ought to restrict the use of Aadhaar to authorized uses only and offer backup authentication options in case Aadhaar authentication doesn't work.
- By locking their Aadhaar data through the UIDAI website or mobile app, users can further secure their data and make biometric information useless even in the event of a breach.

INTERNATIONAL RELATIONS

CONTEXT: India-US 2+2 Ministerial Dialogue, agreements and alliances on a bilateral, regional, and international level that concern India or have an impact on its interests.

Why in News?

- At the most recent 5th Edition of the India-US 2+2 Ministerial Dialogue, both nations showcased their achievements in a range of bilateral cooperation areas, such as defence, semiconductors, emerging technology, space, health, and so forth.

- Since 2018, the leaders of the US have met annually for the 2+2 sessions.

What is 2+2 meeting?**About:**

- The 2+2 meetings are an attempt to expand the scope of communication between the two countries by bringing together two high-ranking representatives from each, the Ministers responsible for the portfolios of defence and foreign affairs.
- With a mechanism like this, partners can more effectively comprehend and value each other's strategic concerns and sensitivities while accounting for political factors on both ends. This helps to forge stronger, more integrated strategic relationships in a world that is changing quickly.

The 2+2 Partners of India:

- India's most important and oldest partner in 2+2 talks is the United States.
- India has also had two-plus-two meetings with ministers from Russia, Australia, Japan, and the United Kingdom.

Which aspects of the India-US 2+2 Dialogue stand out the most?**Defence Deals:**

- To promote a stronger cooperation in defence technologies, both countries sought to cooperatively co-develop and co-produce defence systems.
- Agreements to buy MQ-9B unmanned aerial vehicles and license the Indian manufacturer of General Electric's F-414 jet engine are presently being negotiated between the United States and India.
- These agreements support India's objective of strengthening its defence.
- The Ministers anticipated that a Security of Supply Arrangement (SOSA), a top goal in the Roadmap, would be finalized soon. This arrangement will improve supply chain resilience and further integrate the defence industrial ecosystems of both nations.

Infantry Fighting Vehicles and Upcoming Initiatives:

- The roadmap for defence industry cooperation included discussions between the two parties about infantry combat vehicles, specifically the Stryker.
- Once the requirements of the Indian military are determined, and a concrete production plan is created through cooperation between Indian and U.S. industry and military teams, cooperation in infantry combat systems will be formalized.

Developments in the Collaboration of Defence Technology:

- The goal of the June 2023 launch of the India-US Defence Industrial Ecosystem, or INDUS-X, was to increase defence industry cooperation and the strategic technology partnership. Both parties evaluated the ecosystem's progress.

Combined Maritime Forces Membership:

- The US Defence Secretary praised India's decision to join the Combined Maritime Forces, a multilateral organization with its headquarters located in Bahrain, as a full member.
- India's commitment to regional maritime security is demonstrated by this action.

Safety in the Marines:

- Both countries acknowledged the significance of preserving important sea lanes and fostering stability, and they shared a focus on maritime security in the Indo-Pacific area.

Space and Semiconductor Collaboration:

- The Ministers praised the quick progress achieved in developing science and technology and critical technology value chain collaborations in the commercial and defence sectors under the India-US Initiative on Critical and Emerging Technologies (iCET).
- They urged the corresponding governments, educational institutions, research centres, and business sectors to keep taking the initiative to establish these strategic alliances in cutting-edge fields such as semiconductors, biotechnology, telecom, quantum, and artificial intelligence in order to boost international innovation and the economies of both nations.
- They expressed their gratitude for the Strategic Trade Dialogue Monitoring Mechanism's inaugural meeting.

Talk about the aggression of China:

- The US underlined that their bilateral relationship goes beyond just solving China's problems.

Canada-India Row:

- The ongoing dispute between Canada and India was discussed, with special attention to security issues pertaining to a separatist from Khalistan who is based in both the US and Canada.
- India informed its allies of its stance on important security issues.

Israel-Hamas War:

- India restated its position on the conflict between Israel and Hamas, supporting the early start of talks and a two-state solution (two countries with clearly defined borders that are recognized internationally).
- The provision of humanitarian aid has placed a strong emphasis on upholding international humanitarian law and denouncing the deaths of civilians.

What is the state of India-US relations?**About:**

- A shared commitment to democracy and preserving the rules-based international system form the basis of the U.S.-India strategic partnership.
- Through commerce, investment, and connectivity, both have a stake in advancing international security, stability, and economic prosperity.

Economic Relations:

- In 2022–2023, the United States became India's largest trading partner due to growing economic ties between the two nations.
- Compared to USD 119.5 billion in 2021–2022, the bilateral trade between the United States and India increased by 7.65% to USD 128.55 in 2022–2023.
- While imports increased by roughly 16% to USD 50.24 billion, exports to the United States increased by 2.81% to USD 78.31 billion in 2022–2023 as opposed to USD 76.18 billion in 2021–2022.

Global Collaborations:

- In multilateral institutions such as the United Nations, World Trade Organization, World Bank, ASEAN Regional Forum, International Monetary Fund, and G-20, India and the United States collaborate closely.
- The United States supports a reformed UN Security Council that includes India as a permanent member and welcomed India's two-year term as a member in 2021.
- The United States, India, Australia, and Japan form the Quad to advance an open and free Indo-Pacific and offer real benefits to the area.
- Additionally, India is one of twelve nations that collaborate with the US on the Indo-Pacific Economic Framework for Prosperity (IPEF).

Deals on defence:

- The Logistics Exchange Memorandum of Agreement (LEMOA) from 2016, the Communications Compatibility and Security Agreement (COMCASA) from 2018, and the Basic Exchange and Cooperation Agreement for Geospatial Cooperation (BECA) from 2020 are the four foundational agreements that India has now signed with the US.

What are the main obstacles standing in the way of India and the US?

- US Criticism of India's Foreign Policy: Since the Second World War, alliance relationships have constituted the core of US foreign policy, even though the Indian elite has long viewed the world through a non-alignment lens.
- India's nonalignment policy, particularly during the Cold War, has long caused concern for the West, particularly the US.
- The Indian military vetoed the US request for India to send troops to Afghanistan following the 9/11 attacks.
- Even then, India's former prime minister refused to provide military assistance when the US invaded Iraq in 2003.
- India is still refusing to follow US policy in the Russian-Ukrainian War, and its reliance on cheap Russian oil imports is still problematic.
- Many times, pro-US voices have been heard calling for India to move "on the right side of history."

India's Relations with US Rivals:

- India has taken issue with the US decision to keep Venezuelan and Iranian oil off the open market.
- India has made a concerted effort to get Iran admitted to the Shanghai Cooperation Organization (SCO).

- In addition to continuing to play a significant role in the Asian Infrastructure Investment Bank, which is supported by China, India and China have held eighteen rounds of discussions to settle the border dispute.

US Criticism of Democracy in India:

- Periodically, a number of US organizations and foundations, with the covert backing of certain senators and congressmen, release reports casting doubt on the current state of religious freedom, democracy discourse, and the treatment of India's minorities.
- Among them are the Human Rights Report on India 2021 by Human Rights Watch and the International Religious Freedom Report 2023 by the US State Department.

Unrest in the Economy:

- The belief held in the US that India is moving closer to becoming a protectionist closed market economy has been made worse by the Atmanirbhar Bharat Campaign.
- The USA decided to end the GSP program's duty-free benefits to Indian exporters in June 2019, which will have an impact on the country's export-oriented industries like pharmaceuticals, textiles, agricultural products, and automotive parts.

The Way Ahead

- The two nations' cooperation is essential to maintaining an open, free, and rule-bound Indo-Pacific area.
- For US and Indian companies, the unmatched Demographic Dividend offers tremendous potential for technology transfer, manufacturing, trade, and investment.
- In an international system that is going through an unparalleled transition, India is starting to emerge as a major player. It will make use of its current circumstances to look for ways to advance its core objectives.

PRELIM FACTS

1.Zaglossus attenboroughi

Context:

An elusive echidna named 'Zaglossus attenboroughi', feared extinct after disappearing for six decades, has been rediscovered in a remote part of Indonesia

About Zaglossus attenboroughi

- Known as Attenborough's long-beaked echidna (Zaglossus attenboroughi) or Sir David's Long-beaked Echidna, the animal belongs to a small, unique group of egg-laying mammals called monotremes, which also includes the platypus.
- It is named in honour of naturalist Sir David Attenborough.
- It has never been recorded outside the extremely remote Cyclops Mountains of Indonesia's Papua region.
- Features:
 - It is the smallest known species of long-beaked echidna, weighing between 5 and 10 kilograms.
 - They have five claws on each foot, and adult males have a small, non-venomous spur on the inside of each ankle. Adult females lack these spurs.
 - The fur is distinctive, short, fine, and dense, unlike other echidnas, and raw umber brown in color.
 - There is short fur that covers the few spines on the middle back of this species.
 - Adults have no teeth, but the tongue is covered in tooth-like spikes.
- Conservation Status:
 - IUCN Red List: Critically Endangered
- What are Echidnas?
 - They are unique, quilled creatures with small eyes and a long nose.
 - Similar to hedgehogs, echidnas are spiny, nocturnal creatures that roll into a ball when they sense danger.
 - They are shy creatures that live in burrows and only meet others once a year during mating season.

2.Dnieper River

Context: Russia's military recently said that its forces had thwarted a Ukrainian attempt to forge a bridgehead on the eastern bank of the Dnieper River.

About Dnieper River

- It is the fourth-longest river in Europe (after the Volga, the Danube, and the Ural).
- In Russian, the river's name is Dnepr. In Ukrainian, it is Dnipro, and in Belarusian, it is Dnyapro.
- Located in Eastern Europe, the Dnieper River and its many tributaries drain much of Belarus and Ukraine.

- Historically, the river was an important barrier dividing Ukraine into right and left banks.
- Course:
 - It originates in Russia, in the low Valdai Hills west of Moscow.
 - It runs a total length of 1,368 miles through western Russia, Belarus, and Ukraine before emptying into the Black Sea.
 - Approximately 300 miles of the waterway is located in Russia, 430 miles are in Belarus, and 680 miles are within Ukraine.
 - It passes through numerous urban centers such as the Russian cities of Smolensk and Dorogobuzh, as well as Mogilev in Belarus and Kiev, Cherkasy, Dnipro, and Zaporizhia in Ukraine.
- Tributaries: It has as many as 32,000 tributaries, including the Sozh, Desna, Trubizh, Bilozerka, Drut, Berezina, and Prypiat Rivers.

3. Ministry of Housing & Urban Affairs launches 'AANA Dashboard for Cities' portal

- Pioneering portal will provide information on status and progress of cities on five broad thematic areas
 - On a regular basis, urban local bodies (ULBs) around the country can voluntarily contribute their critical statistics, including audited accounts and self-reported performance metrics.
 - The Ministry will assist ULBs and States in the data submission process through Digital India Corporation (DIC).
 - ✓ DIC provides strategic assistance to Ministries/Departments in carrying out the Digital India Mission.

Key objectives of portal:

Healthy Competition: ULBs can now see how their ULB is faring vis-a-vis other ULBs.

Inspiration: Motivation for ULBs to identify the possibilities available for improvement.

Learning: Opportunity for ULBs to learn and implement best practices from peers

Need for the portal: Critical data on single platforms would be helpful for planning new schemes and making policy decisions

About ULBs

- Constitutional body: 74th (1992) Constitution Amendment Act recognises ULBs as third tier of government and categorises them based on population size as:
 - Nagar Panchayats for 'rurban' areas.
 - Municipal Councils for smaller urban areas.
 - Municipal Corporations for metropolitan areas.
- **Functions:** 18 specific functions enumerated in 12th schedule of Constitution.
- **Term:** 5 years (re-election is scheduled within six months of completion of term).

4. Children's Day 2023

- Children's Day, also known as 'Bal Diwas,' is celebrated every year on November 14 in India.
- It is the birth anniversary of Pandit Jawaharlal Nehru, the country's first prime minister, a leader who held a profound affection for children and believed in their capacity to influence the nation's destiny.
- Bal Diwas is devoted to promoting awareness about children's rights and their overall well-being.
- The theme for this year's Children's Day, 'For every child, every right,' emphasizes the dedication to uphold the rights of every child globally.

5. Hazards of Firecrackers

Extreme exposure to firecrackers is hazardous as they have chemicals like:

- Strontium (produces red colour): causes bone growth problems in children.
- Barium (produces green colour): causes damage to nervous system and heart tremors, weakness, paralysis, etc.
- Copper compounds (produces blue colour): causes skin problems, Cancer, hormonal imbalances.
- Aluminium (produces white light): Causes contact dermatitis and bioaccumulation.
- Antimony sulphide (glitter effect): Carcinogen and can cause Alzheimer's disease.
- Barium nitrate and lithium compounds, also commonly used cause immediate respiratory stress.

6. Fifth India-US 2+2 Ministerial Dialogue concludes successfully in Delhi

- In 2+2 dialogue, foreign and defence ministers participated and discussed strategic and security issues.
 - India also has 2+2 dialogue mechanism with Australia, Japan, the United Kingdom and Russia.

Key Highlights:

- **Defence:** Both to co-produce infantry combat vehicles as part of Defense Industrial Cooperation.
 - Both looked forward to finalizing Security of Supply Arrangement (SOSA).
 - It will further integrate the defense industrial ecosystems of both countries while strengthening supply chain resilience
- **Science and Technology Partnerships:** Reviewed U.S.- India Initiative on Critical and Emerging Technology (iCET).
 - iCET aims to strengthen and broaden the strategic technological partnership between the companies, and academic institutions.
- **Trade:** Welcomed the progress of the Indo-Pacific Economic Framework for Prosperity (IPEF).
 - IPEF has four pillars relating to Trade (I); Supply Chains (II); Clean Economy (III); and Fair Economy (IV). India has joined three pillars of the IPEF, but stayed out of the trade pillar.
- **Multilateral Diplomacy and Connectivity:** Both reaffirmed the importance of a free, open, inclusive and resilient IndoPacific and reiterated benefits of India-Middle East-Europe Economic Corridor.
- **Other:** Improve Cooperation under the USA's Cancer Moonshot program

ANSWER WRITING

Discuss the significance of the Vijayanagara Empire in shaping India's architectural history.

Introduction

India's architectural history has been greatly influenced by the Vijayanagara Empire, which flourished in South India from the 14th to the 17th century. Its contributions to architecture have created a lasting legacy that still inspires and shapes Indian art and architecture today.

The Vijayanagara Empire's influence on the development of Indian architecture:

Fusion of Styles: The architecture of Vijayanagara is well known for fusing together a variety of architectural forms. It combined aspects of Islamic, Chalukyan, Dravidian, and Hoysala architecture to create a singular, recognizable architectural language. This combination produced a fresh design language that was visually appealing and inventive.

Monumental Structures: The empire is renowned for building enormous forts, palaces, irrigation systems, and grand temple complexes. The Virupaksha Temple, the Vittala Temple, and the Hampi ruins stand out among them. These buildings demonstrate the empire's dedication to building colossal structures for administrative, religious, and cultural functions.

Iconic Temple Architecture: The grand gopurams (gateway towers), elaborate sculptures, and expansive courtyards are the distinguishing features of Vijayanagara temple architecture. The most famous illustration is the 160-foot-tall gopuram of the Virupaksha Temple, a masterpiece of Dravidian architecture. These temples continue to play a crucial role in the development of South Indian temple design.

Developments in Construction Techniques: The Vijayanagara school of architects and engineers made important strides in the field of construction. To build sturdy and aesthetically pleasing structures, they employed sophisticated structural systems, elaborate stucco work, and finely carved stone blocks. Later developments in Indian architecture were influenced by this expertise.

Water Management and Irrigation: Another facet of the empire's architectural legacy is its emphasis on irrigation systems and water management. In addition to promoting agriculture, the building of enormous tanks and canals, like the Pushkarni tank and the Tungabhadra Dam, demonstrated the empire's engineering prowess.

Patronage of the Arts: The Vijayanagara Empire's emperors showed a great deal of support for the arts, which included architecture. They inspired master craftspeople, sculptors, and architects to produce magnificent artwork. Because of this patronage, there are now many highly skilled craftspeople and a thriving artistic tradition.

Cultural Syncretism: The architectural accomplishments of the Vijayanagara Empire are indicative of the cultural syncretism of the time. It combined many different influences, such as Islamic, Hindu, and regional customs. The empire's inclusive policies are demonstrated by this blending of cultures, which has produced a rich and varied architectural legacy.

Preservation of Heritage: Many of the architectural wonders of the empire have withstood the test of time, despite its eventual decline and fall. They remain significant tourist destinations, places of pilgrimage, and sources of inspiration for modern architects, thus ensuring the preservation and recognition of India's architectural history.

Conclusion

One of the most important periods in Indian architectural history is the Vijayanagara Empire. Its architectural legacy is a harmonious synthesis of many architectural traditions as well as a display of the empire's grandeur and artistic accomplishments. Vijayanagara architecture's lasting impact on later architectural advancements in India highlights how important it was in forming the nation's architectural legacy.

MCQs

- With reference to India-US relations, consider the following statements:
 - The 2+2 meetings have been held annually with the US leaders since 2018.
 - India and the US have signed four foundational defense agreements.
 Which of the statements given above is/are correct?
 - 1 only
 - 2 only
 - Both 1 and 2**
 - Neither 1 nor 2
- AINA Dashboard, recently seen in news was launched by which of the following Ministry?
 - Ministry of Housing and Urban Affairs**
 - Ministry of Skill Development and Entrepreneurship
 - Ministry of Commerce and Industry
 - Ministry of Agriculture & Farmers Welfare
- With reference to Pandit Jawahar Lal Nehru, consider the following statements:
 - He led the protest against the Simon Commission in 1930.
 - He presided over the INC meeting during Lahore Session (1929) and Lucknow Session (1936).
 - He was the first Satyagrahi of Individual Satyagraha.
 How many of the above statements are correct?
 - Only one**
 - Only two
 - All three
 - None
- Consider the following statements about Dnieper River
 - It is the longest river of Europe.
 - It originates in Russia, in the low Valdai Hills west of Moscow.
 - It runs through Russia, Belarus, and Ukraine before emptying into the Black Sea.
 How many of the statements given above are correct?
 - Only one
 - Only two**
 - All three
 - None of the above
- Consider the following statements about Zaglossus attenboroughi
 - It is found only in the extremely remote Cyclops Mountains of Indonesia's Papua region.
 - The animal belongs to a small, unique group of egg-laying mammals called monotremes.
 - It is listed as Endangered in IUCN Red List.
- How many of the statements given above are correct?
 - Only one**
 - Only two**
 - All three
 - None of the above
- Consider the following statements
 - India stands as the world's second-largest producer of raw silk after China.
 - Central Silk Board is a statutory body under the administrative control of the Ministry of Textiles.
 Choose the correct statements:
 - 1 only
 - 2 only
 - Both 1 and 2**
 - Neither 1 nor 2
- Regarding the Aadhar, consider the following statements:
 - The Aadhaar identity platform is one of the key pillars of 'Digital India', wherein every resident of the country is provided with a unique identity.
 - The Aadhaar number is a proof of identity and confers a right of citizenship or domicile.
 - Any individual, irrespective of age and gender, who is a resident of India, may voluntarily enroll to obtain an Aadhaar number.
 How many of the statements given above are correct?
 - Only one
 - Only two**
 - All three
 - None of the above
- 'The Ben Gurion Canal Project' was recently in the news. It proposed to connect which one of the pairs of water bodies?
 - Persian Gulf and Gulf of Oman
 - Mediterranean Sea and Atlantic Ocean
 - Gulf of Aqaba to the Mediterranean Sea**
 - English Channel and North Sea
- Which of the following is correct regarding PET plastic.
 - PET plastic is a common type of plastic used to make bottles, containers, and synthetic fibres.
 - It is known for its transparency, lightweight nature, and recyclability.
 - It produces less product waste due to its resistance to breakage and denting.
 - All of the above**
- Subansiri River is the tributary of –
 - Ganga River
 - Narmada River
 - Brahmaputra River**
 - Krishna River