GOVERNMENT POLYTECHNIC NANDED

DATAFICATION

MONITORING..

ENABLED PERSONALIZED EXPERIENCES..

INFORMED DECISION-MAKING..

SURVEILLANCE AND BEHAVIORAL CHANGE..

ENHANCED EFFICIENCY AND INSIGHT..

ETHICAL CONSIDERATIONS..

GOVERNMENT POLYTECHNIC , NANDED

DEPARTMENT OF INFORMATION TECHNOLOGY

VISION

Become premier centre in the Information Technology with value based education that will prepare students for ever changing technological challenges of 21st century.

MISSION

M1: To train the students in the latest technologies.

M2: Provide an environment that inculcates ethics and effective soft-skills.

M3: Develop the skill sets among students that will benefit employer and society.

GOVERNMENT POLYTECHNIC, NANDED

DEPARTMENT OF INFORMATION TECHNOLOGY

Program Educational Objectives (PEOs)

PEO1
Become competent Information technology engineers to work a programmer or an administrator in a team or as a indvidual.

PEO2
Pursue higher studies in relevant field of engineering with a desire for lifelong Learning

PEO3
Become a successful professional with ethical and societal responsibilities

GOVERNMENT POLYTECHNIC, NANDED

DEPARTMENT OF INFORMATION TECHNOLOGY

Program Outcomes (pos)

(what s/he will be able to do at the entry point of industry soon after the diploma program)

1.Basic and discipline specific knowledge :

apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems

2.Problem analysis :

identify and analyse well-defined engineering problems using codified standard methods

3.Design/ development of solutions :

design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs

4.Engineering tools, experimentation and testing :

apply modern engineering tools and appropriate technique to conduct standard tests and measurements

5.Engineering practices for society, sustainability and environment :

apply appropriate technology in context of society, sustainability, environment and ethical practices

6.Project management :

use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities

7.Life-long learning :

ability to analyse individual needs and engage in updating in the context of technological changes

Program Specific Outcomes (psos)

(what s/he will be able to do in the information technology specific industry soon after the diploma program)

1.Modern information technology:

use latest technologies for operation and application of information.

2.Information technology process:

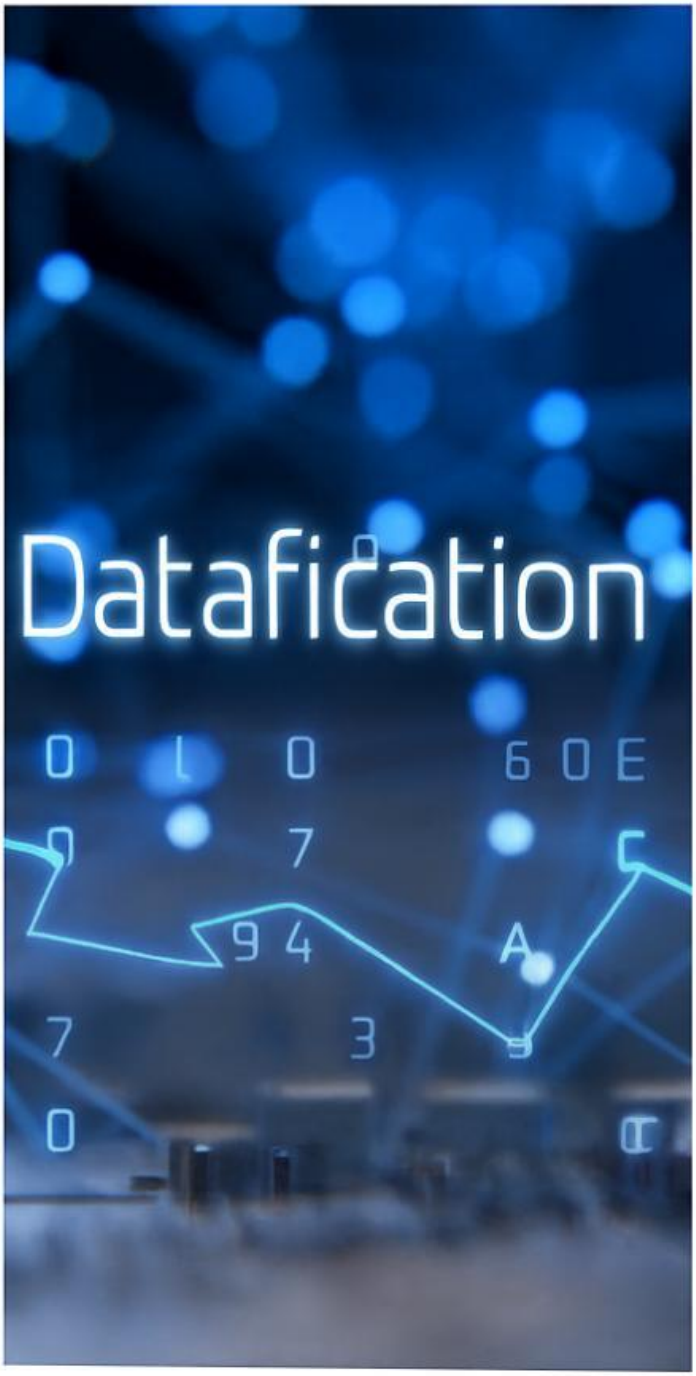
maintain the information processes using modern information and communication technologies

CONTENTS

What is Datafication?

Datafication

is the process of transforming aspects of life, business, and society into quantifiable data that can analyzed and used for various purposes. It's essentially the digital translation of the real world, turning previously unquantifiable elements into data points. This involves collecting, storing processing and analyzing information to gain insights.



TYPES OF DATAFICATION

01 DATAFICATION OF HEALTHCARE

Healthcare datafication includes use of electronic health records, medical imaging technologies, and u earable health moniforing devices to gather and utilize largie scale clinical data to improve patient care and outcomes.

02 DATAFICATION OF BUSINESS

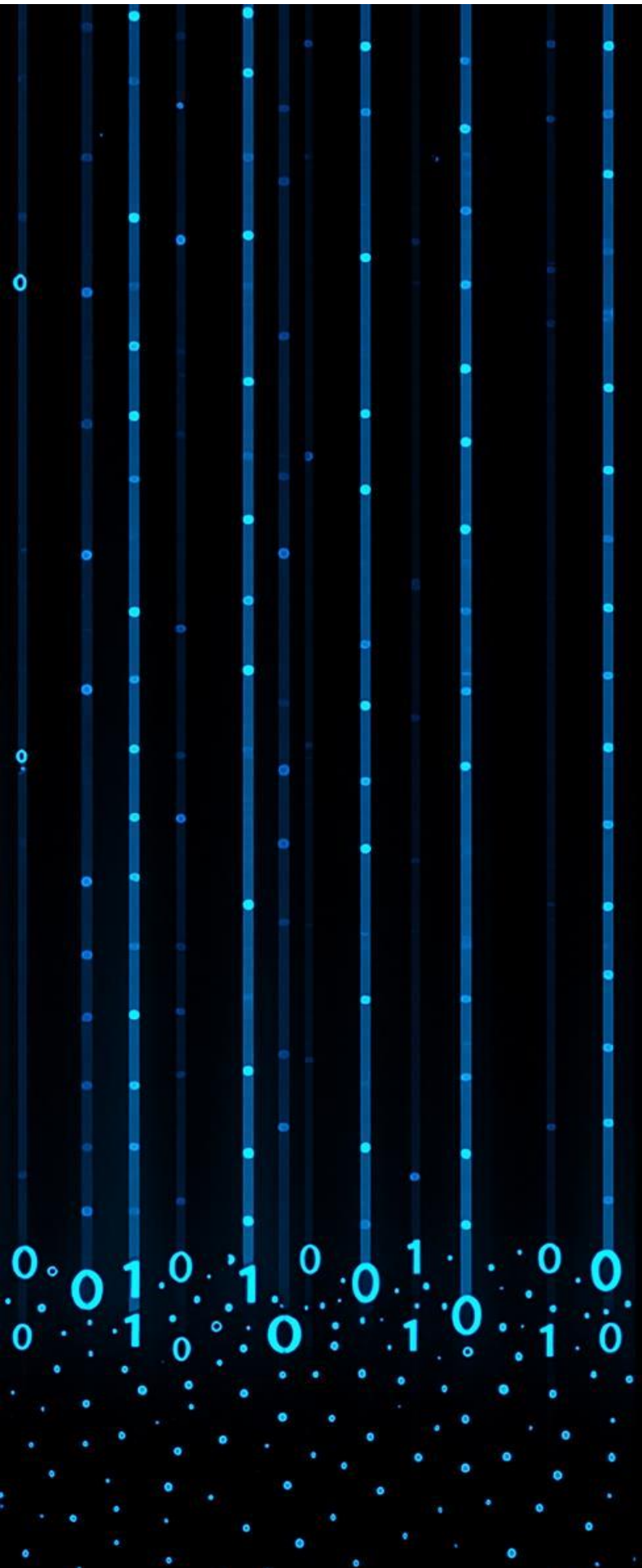
Datafication in business involves using data to better understa nd markets, customer behevi- our, and

03 DATAFICATION OF SOCIETY

Societal dataf ication refers to the large-seale collection of data from individuals and communities, including social media c and transportation

04 DATAFICATION OF ENVIRONMENT

Environmental datafcation includes the use of sensors an



TYPES OF DATAFICATION

05 DATA COLLECTION

Data collection involves gathering information from various sources, urch as, such as devices, sensors, social media.

06 DATA PROCESSING

Data processing transforms raw data into a more urable and useful form. This step inludes cleaning, validating, and agrging data.

07 DATA ANALYSIS

Data analysis involves examining, modeling, and interprating data, to uncover patterns, cortelations, and insights.

08 DATA UTILIZATION

Data utilization refers to the application of collected and analyzed data for

BENEFITS OF DATAFICATION FOR BUSINESS

1. **Better Decision-Making**
   Datafication helps businesses collect and analyze data, giving leaders accurate insights to make smarter and faster decisions.

2. **Improved Efficiency**
   By converting processes into data, businesses can track performance, identify weak areas, and improve operational eiiiciency..

3. **Enhanced Customer Experience**
   Datafication allows companies to understand customer behavior and preferences, enabling them to offer personalized products and services.

4. **Innovation and Growth**
   With access to real-time data, businesses can identify market trends, predict customer demands, and innovate new solutions.

5. **Stronger Risk Management**
   Datafication makes it easier to detect fraud, predict risks, and implement proactive strategies to reduce business threats.

Businesses can unlock growth and innovation through datafication.

Education

Benefits and promises:: 100

Data collection:

Information from various sources, such as student performance, attendance ,behavioral platforms, and engagement with digital platform,is systematically gathered..

Data Analysis:

Collected data is analyzed to identify patterns,predict outcomes, and understand student learning processes.

Data utilization :

The data is used for evidence -based decision -making, allowing educators and administrations to tailor learning experiences, hold schools accountable, and implement interventions..

Personalized learning:

Data can be used to create tailored learning paths and educational experiences for individual students..

Improved school Development:

Data helps in understanding how students learn improving curriculum design,and enhancing overall school performance..

Performance evaluation:

Data allows for the evaluation and comparison of student achievements and the accountability of school and teachers

EDUCATION
UNIVERSITY

Evidence -based decision -making:

Datafication provides the means for making decisions based on evidence rather than assumptions, leading to more effective

Healthcare

This process transform row patie data, including records from electrical health records(EHRs)and lot devices,into actionable insights through big data analytics and machine learning.key benefits includes personalised medicine, predictive analytics for disease prevention,optimised resources, allocation ,and the acceleration of medical research leading to improve outcomes and lower costs..

Data collection:

Raw health data is collected from various sources,such as Electronic Health records EHRs, medicine imaging, clinical trials, wearable devices (Iot) and even patient -reported information..

Data transformation:

This collection data,which can be structured or unstructured,is then cleansed,processed,and analysed using advanced analytics, machine learning,and data mining techniques..

Insight Generation :

The analysis generated insights that can inform healthcare providers, researchers,and public health organizations about patient conditions, treatment effectiveness, and population health trends..

Smart cities

Datafication is the process of collecting, storing,and analyzing vast amounts of urban data, often from IoT sensors and digital infrastructure,to inform decision-making and improve urban management in smart cities..

Data collection:

- Sensors, cameras,and internet of IoT devices this used to collect data on everything from traffic flow and energy consumption to waste management a public safetv..

Data analysis:

- Big data analytics and AI are used to process this information to gain inside into cities behaviour

Infrastructure:

- Smart cities rely on networked digital infrastructures to collect and transmit data,

Smart cities benefits

Improve Efficiency:

Smart citizens leverage advantage technology to optimise the use of resources and infrastructure. Is leads to increase the FNC in areas such as energy consumption, transportation ,waste management ,and water distribution .for example ,smart grids can dynamically adjust every distribution based on damand reducing waste and cost..

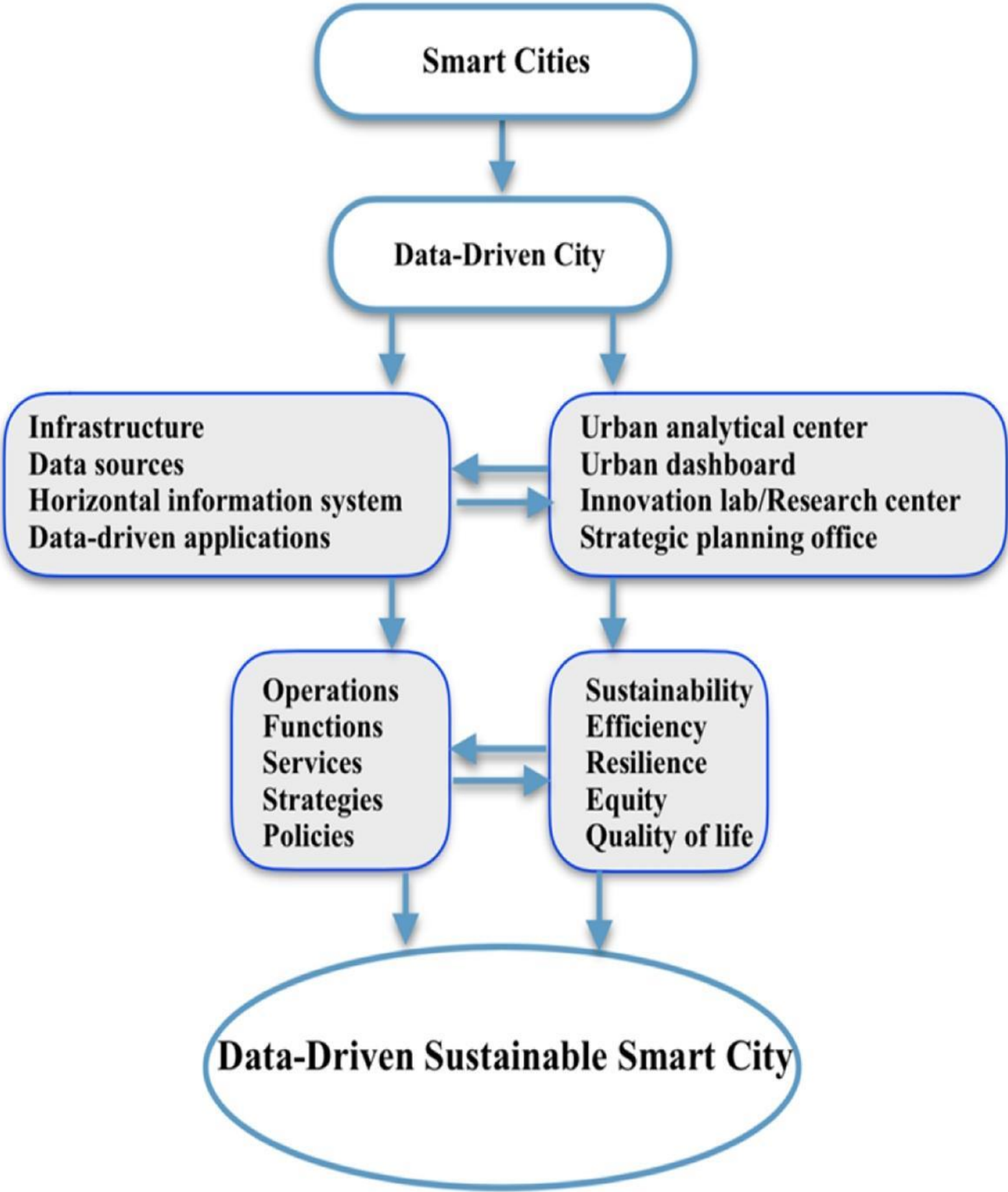
Enhanced sustainability:

By integrating smart technology cities can achieve greater substability. this include initiatives like energy -effects buildings renewable energy sources smart transportation systems the reduce traffic congestion and emissions, and effective waste management practices.smart cities prioritize environment protection and aim to minimize their carbon footprint.

Better quality of life:

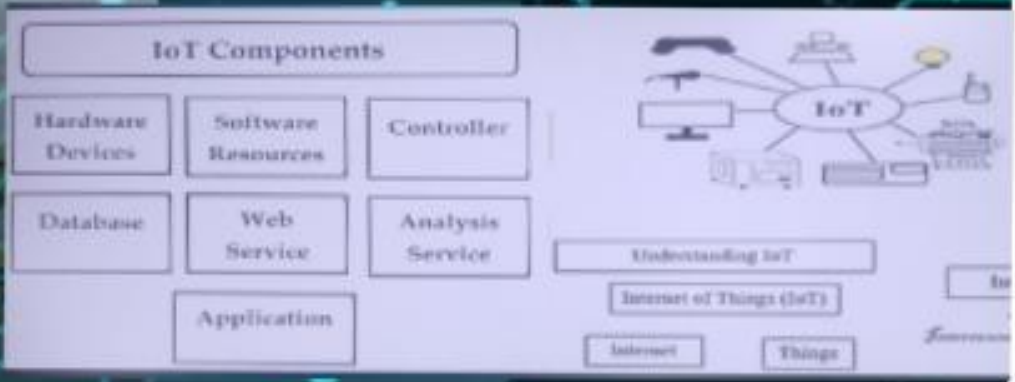
Smart citizens focus on enhancing the overall well being the residents.they offer improved public safety thought surveillance systems.smart energy services,and data dragon crime prevention strantegies.smart healthcare system provide remote patient monitoring, telemedicine,and personalised health care service additionally Smart City infrastructure enhances essays to education, entertainment, and culture amenities.enriching the overall quality of life..

It's important to know that the implementation of Smart City initiatives should prioritize privacy, data security, and equitab access to ensure that the benefits are accessible to all reside while addressing potential concerns and risks associated wit technology integrated


Smart Cities
Data-Driven City
Infrastructure
Data sources
Horizontal information system
Data-driven applications
Urban analytical center
Urban dashboard
Innovation lab/Research center
Strategic planning office
Operations
Functions
Services
Strategies
Policies
Sustainability
Efficiency
Resilience
Equity
Quality of life
Data-Driven Sustainable Smart City

DATAFICATION & THE INTERNET OF THINGS (IOT):

A DATA-DRIVEN FUTURE



Internet of things (IOT)

DATAFICATION IN FINIANCE

Datafication is playing a huge role in transforming the financial sector. By converting customer transactions, behaviors, and market activities into data, financial institutions can improve their services, security, and decision-making.

1. Uses of Datafication in Finance:

Fraud Detection & Prevention
Analyzing transaction patterns helps banks detect unusual or fraudulent activities in real-time.

Risk Management
Financial companies use data to predict credit risks, loan defaults, and investment risks.

Personalized Banking
Data helps banks provide customized services like loan offers, investment advice, and financial planning.

Stock Market Insights
Traders use real-time data to analyze trends, forecast market movements, and make better investments.

Customer Experience
Chatbots and AI-powered banking assistants use data to improve customer support.

Regulatory Compliance
Datafication ensures accurate reporting and compliance with financial regulations.

Roll of Artificial intelligence in Datafication

- Data Generation and collect:
  - AI-driven sensors (IOT,wearables,smart devices)
    Produce and capture data automatically
  - Example: smartwatches tracking health metrics.
- Data processing and cleaning:
  - Raw data is often unstructured (images, videos,text)
  - AI helps convert messy data into usable formats with NLP, computer vision,etc.
- Pattern recognition and insights
  - AI algorithm detect trends and patters hidden in hug datasets
  - Example: customer behaviour prediction in e-commerce
- Ethics and Governance:
  - AI plays a roll in addressing issues of bias, surveillance,and privacy that come with massive datafication..

DATA SECURITY AND PRIVACY CONCERNS

Data security and privacy concerns

Data security and privacy concerns a majority of the theft, unauthorized access and misuse of personal information such as financial details, passwords, and other sensitive information without their consent. Data security issues pose a risk of identity theft and how cybercriminals exploit these vulnerabilities and lead to to lilegal /otheros exploit these iilegal or unethical activities.

5 Reasons why Datafication is the Future of Business.

1. Enhances customer experiences.
2. Improves operational efficiency.
3. Encourages data-driven decision-making.
4. Drives innovations and new business models.
5. Enables predictive analytics and forecasting.

skill-mine.com

FUTURE OF DATAFICATION

1. **Expansion of IoT and Smart Devices**
   Har device se data generate hoga (smart homes, cars, wearables).
2. **Al and Machine Learning Integration**
   Data ko aur smart tarike se analyze kiya juye ga
3. **Growth of Predictive Analytics**
   Companies future trends aur customer neeeds predict karengi
4. **Enhanced Personalization**
   Education, healthcare, shopping me customized experience
5. **Rise of Data Privacy & Security**
   Datafication ke sath privacy aur cyber security ki demand badhegi
6. **Data-Driven Governance**
   Governments policies aur smarral anad coie me data ka use karengi
7. **Automation and Robotics**
   Data storage aur verification tion blockchain par

DATAFICATION CONCLUSION

With the integration of Artificial Intelligence, Big Data, and the Internet of Things (IoT), datafication will continue to shape the future of industries such as healthcare, education, business, and governance.

With the integration of Artificial Intelligence, Big Data, and the Internet of Things (IoT), datafication will continue to shape the future of industries such as healthcare, education, business, and governance.

In conclusion, datafication is not just a trend but a long-term revolution that will drive digital transformation and redefine how society functions. The future belongs to those who can effectively collect, analyze, and utilize data for meaningful outcomes.

Principal:: DR.N.L.Janrao

HEAD OF DEPARTMENT::S.N.DHOLE

MENTOR:: A.G.RAMPURE MAM

NAME :-PATIL DURGA SHIVKUMAR

ROLL NO:-909


THANK YOU