TRINITY UNIVERSITY
Building on the Rock

www.trinityuniversity.edu.ng

Building Future-Ready Universities and Students: The Imperatives of ICT

Prof. Charles Ayo

Vice-Chancellor, Trinity University

Former Vice-Chancellor, Covenant University

BEING THE 3RD MATRICULATION LECTURE OF DOMINION UNIVERSITY, IBADAN, APRIL 8TH, 2022.

Lecture Outline

1. Appreciation & Acknowledgements
2. Introduction
3. The Perspectives of Private Universities
4. Future-Ready Universities & Students
5. Disruptive Technologies
6. Cyberpreneurship
7. Recommendations and Conclusion

APPRECIATION & ACKNOWLEDGEMENTS

Appreciation & Acknowledgements

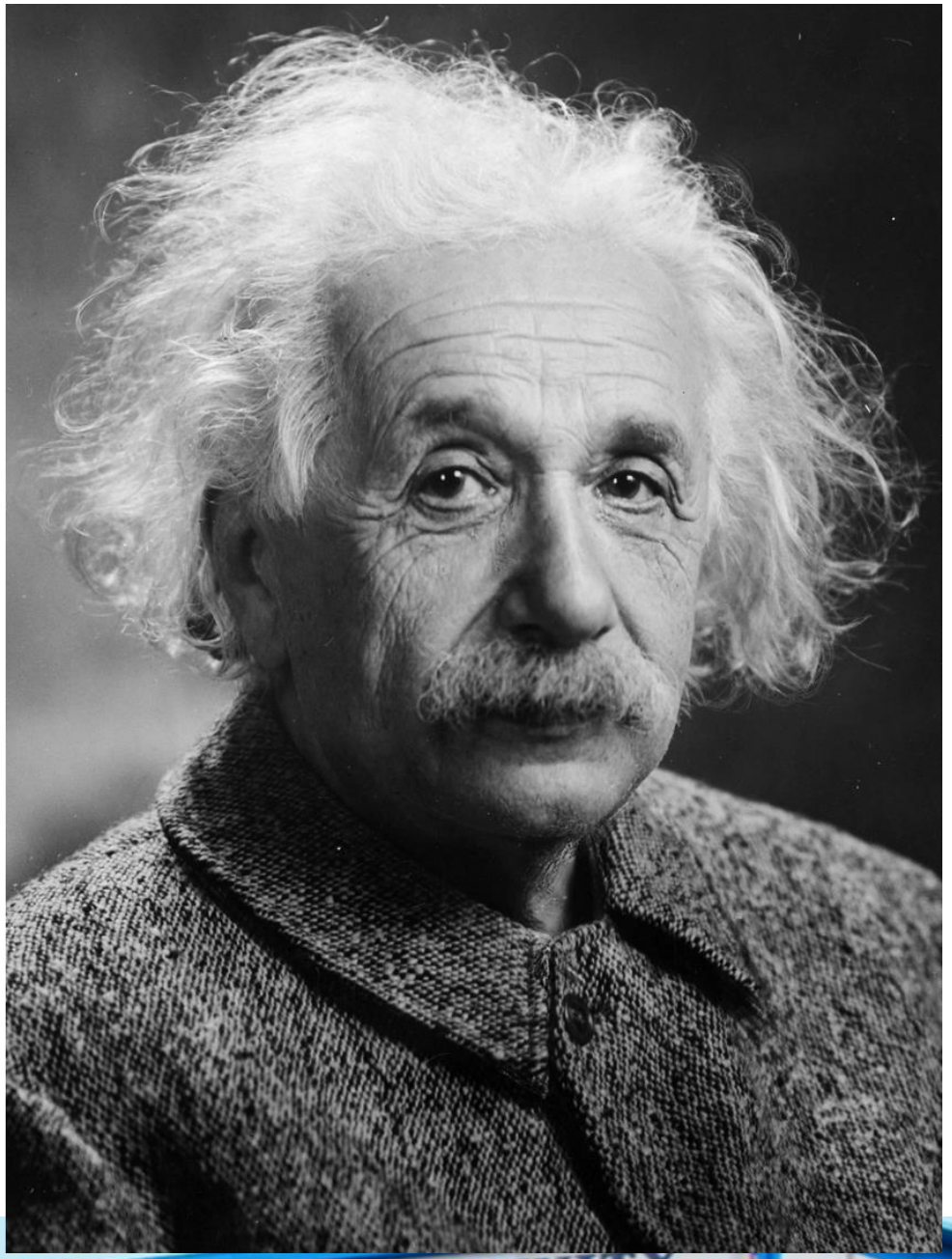
- **Chancellor and Founder of DU** and the General Overseer of the Victory International Church World-wide.- Bishop Taiwo Adelakun.
- The Board of Trustees.
- The Vice-Chancellor, Management, Staff, and Students of Dominion University.

INTRODUCTION

Introduction

"To create the future, we will need a huge shift in thinking, values, and action."

- Albert Einstein



Introduction Cont'd

Early Days

- The first generation of universities produced graduates that were sought after by both local and foreign companies & Institutions (Obasanjo, 2012).
- In the 50s/60s the University of Ibadan was ranked among the top 50 universities in the world.
- Our founding fathers committed between 40% – 50% budget to Education.

Introduction Cont'd

- Today's education system is faced with:
  - ✓ Inadequate Access,
  - ✓ Poor Quality, and
  - ✓ Unemployability.
- Also, there are other social vices like cultism, examination malpractice, indecent dressing, prostitution/marks for sex, etc.
- National consequences: corruption, moral decadence, kidnapping, herdsmen killings, Boko Haram insurgency, amongst others.

Introduction Cont'd

"The country is producing less leaders, managers, teachers and other professionals but mass-producing miscreants, the disaffected and the rejected, the misdirected, the unlearned, the angry, the wronged, the agitated and the hopeless"
Ezekwesili (2006).

Introduction Cont'd

Global Developmental Strides:

- Generally, the world has witnessed several Industrial Revolutions (IR), ranging from the 1st, 2nd, 3rd, to lately the 4th, referred to as 4IR.
- Both Industrial Revolutions and Digital Revolutions (Disruptive Technologies) have changed the demands in the world of work.
- It has been reported that:
  - The future of work won't be about college degrees, it will be about job skills.
  - Tech giants such as Apple, IBM and Google no longer require a degree, well-paying jobs are offered to those with non-traditional education or a high-school diploma.

THE PERSPECTIVES OF PRIVATE UNIVERSITIES

The Perspectives of Private Universities

THE Ranking, 2021

Ranking	University	Country	Ownership	Stud Pop	Staff/Stud Rat.	Year Estab
1	Oxford	UK	Private (C)	20,774	11.1	1096
2	Stanford	US	Private (I) Jane and Leland Stanford	16,223	7.1	1885
3	Harvard	US	Private (C)	21,261	9.3	1636
4	CalTech	US	Private (I) Amos G. Throop	2,238	6.3	1891
5	MIT	US	Private (I) William Barton Rogers	11,276	8.4	1861
6	Cambridge	UK	Private (C)	19,370	11	1209
7	Calif. Berkeley	US	Private (C)	39,918	19.8	1886
8	Yale	US	Private (C)	12,910	6.0	1701
9	Princeton	US	Private (C)	8,091	8.0	1746
10	Chicago	US	Private (C)	14,292	5.9	1890

Legend:
C(7) – Church
I(3) - Individual

The Perspectives of Private Universities Cont'd

Even in Nigeria, the trend is same.

- Covenant, Babcock, Redeemers, Bowen, ABUAD, Landmark, etc.

- The intervention of private universities was a call to duty to address the decay in the higher education context, particularly with regard to:
  - moral decadence
  - unstable academic calendar
  - poor infrastructure
  - inadequate qualified faculty
  - lack of entrepreneurial education
  - low in global competitiveness (Quality, IT education, Self employment, etc).

The Perspectives of Private Universities Cont'd

- Quality:
  - Private Universities maintain a stable and unbroken Academic Calendar.
  - Private Universities enforce strict adherence to Lecture Time-table.
  - Private Universities maintain reasonable percentage attendance from students to write examinations.
  - Private Universities introduced Entrepreneurial Education in Nigeria.
  - Most Private Universities are better equipped in terms of infrastructure.
  - Private Universities are far ahead of the public in terms of IT adoption and implementation in Learning (electronic/online Learning).
  - Regardless of the number of Professors, if you are always on strike (Public), it's worst for the students - Learning does not happen through osmosis.

The Perspectives of Private Universities Cont'd

- Morals:
  - Private Universities:
    - ✓introduced dress code into the system;
    - ✓have zero tolerance for Cultism and Exam malpractice;
    - ✓have zero tolerance for indiscipline and any act of insubordination;
    - ✓introduced specialized programmes to give their graduates the competitive edge needed in the world of work;
    - ✓provide decent accommodation and learning environment that engender decent lifestyle and leadership development; and
    - ✓provide a line of communication with parents and timely release of results to prevent having 'Professional Students' on Campus.

FUTURE-READY UNIVERSITIES & STUDENTS

Future-Ready Universities & Students

- The disruptions by the 4IR demand that:
  - Universities engage collaborative learning as a strategy of Teach Less, Learn More (TLLM) methodology.
  - Future conscious HEIs understand the importance to redesign curriculum, content, and assessments to prepare graduates for employment and self-reliance.
  - Universities adopt problem-based learning (PBL) as a basis for TLLM methodology.

Future-Ready Universities & Students Cont'd

- Universities shift focus from:
  - Teaching to learning and redirecting the focus of assessment from knowledge base to skills base.
  - Knowledge accumulation to equipping graduates with the needs of industry, particularly the 4IR and beyond.
- Graduates exhibit competencies beyond discipline-specific knowledge.
- Graduates thrive in a complex world filled with rapid advancements in knowledge and technology.
- Graduates must possess lifelong learning skills, think critically and creatively, be socially intelligent, resilient, and adaptive.

Future-Ready Universities & Students Cont'd

R	*Robust, Rigorous Resources*
E	*Engaged Students with Equitable Access*
A	*Active Parents for Deeper Engagement*
D	*Dedicated Educators*
Y	*"Yes Culture" of Leadership*

Future-Ready Universities & Students Cont'd

- Future Ready students are:
  - ✓On time everyday for work/school – and dressed appropriately.
  - ✓Motivated to finish each task and learn from helpful criticism.
  - ✓Prepared to follow the rules of the workplace/school, including policies on ethics, culture and safety.
  - ✓Able to work well in teams and to listen, speak confidently and communicate with co-workers in writing.

Future-Ready Universities & Students Cont'd

- Future Ready students are:
  - ✓Able to think critically and creatively to tackle big assignments.
  - ✓ Motivated to learn, curious enough to explore ideas on their own, and bold enough to ask for help when needed.
  - ✓ Able to analyze situations, form opinions, and decide how to move forward.

DISRUPTIVE TECHNOLOGIES

Disruptive Technologies

DT refers to:

- ✓ A disruptive technology sweeps away the systems or habits, it replaces because it has attributes that are recognizably superior. -- TIM SMITH
- ✓ A technology that has the capability to alter our lifestyle, work, business and global economy.

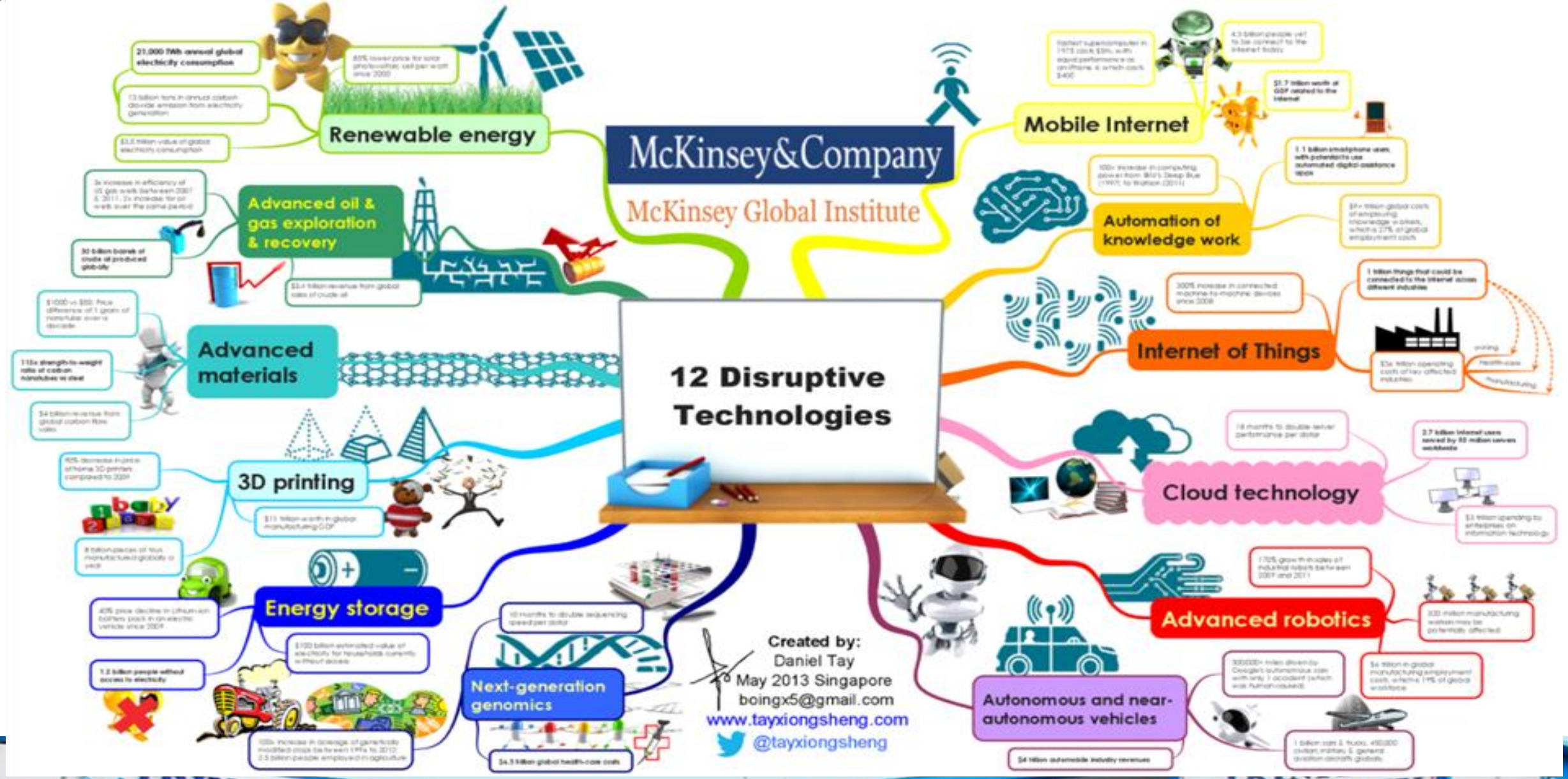
If we lost out in the 1st, 2nd, 3rd IRs we cannot afford to lose out on the 4IR.

Disruptive Technologies Cont'd

- ✓ Just as the IR transformed society, culture, politics, and individual consciousness, DT is changing much about 21st Century.

- ✓ This evolving concept is centered on what is called the "combinatorial effects" of the new internet-based technologies such as:
  - ✓ Mobile Computing, Cloud, Artificial Intelligence, Sensors, and Big Data Analytics amongst others, which are beginning to dramatically alter today's industries (Keen, 2018).

Disruptive Technologies Cont'd



Disruptive Technologies Cont'd

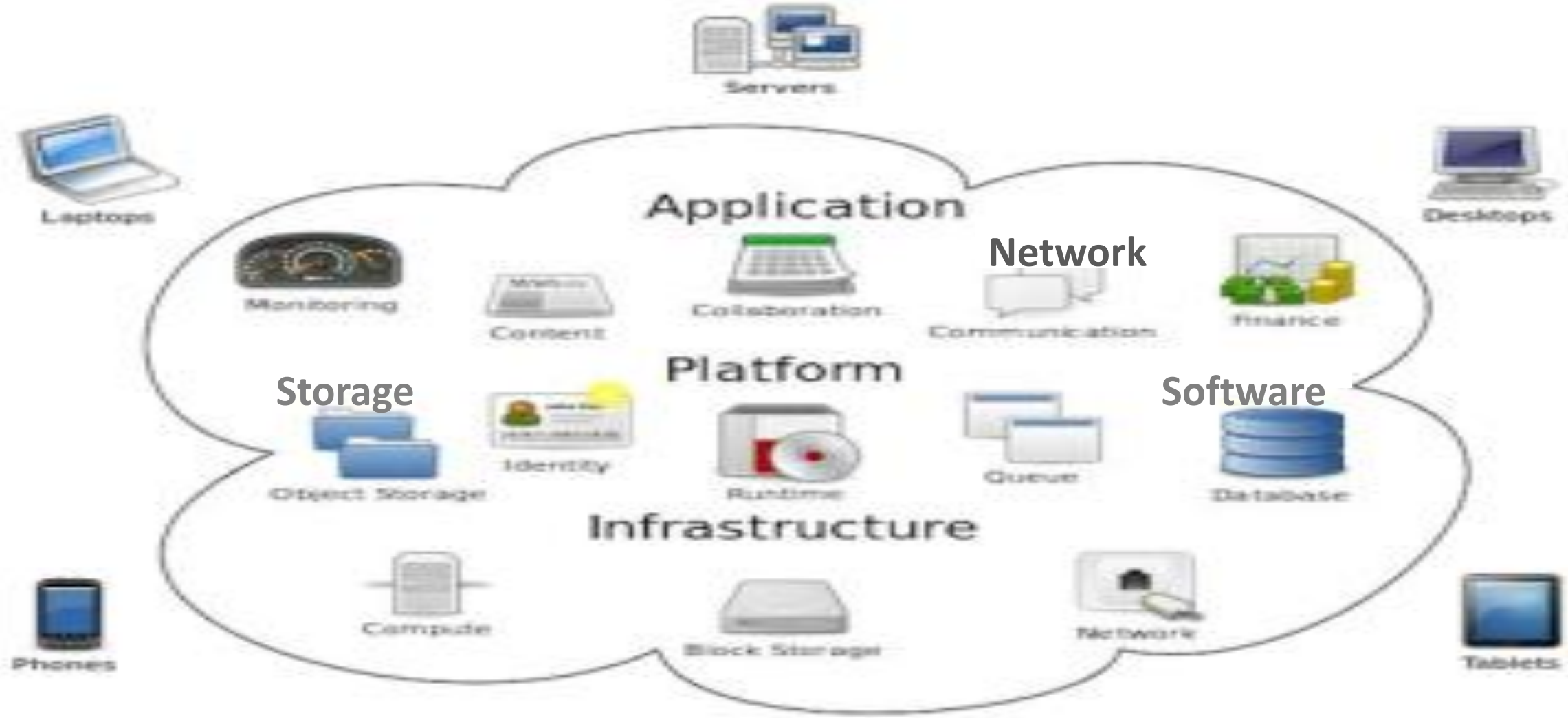
1. Cloud Computing

- Cloud promises to eliminate the necessity of upfront hardware investment and is typically available on a short-term, pay-as-you-go basis.

For simplicity:

- It is an Internet-based computing technology.
- A virtual network of both services and infrastructure.
- It can be accessed from anywhere, to anywhere, at anytime.

Disruptive Technologies Cont'd



Disruptive Technologies Cont'd

- Cloud computing models:
  - **Software as a Service (SaaS)** - Google Apps, Dropbox, Salesforce, Cisco WebEx, Concur, GoToMeeting, Zoom, Moodle, Skype/Teams, Google Meet, Google Classroom etc.
  - **Platform as a Service (PaaS)** - AWS Elastic Beanstalk, Heroku, Windows Azure (mostly **used as PaaS), Force.com, OpenShift, Apache Stratos, Magento Commerce Cloud.**
  - **Infrastructure as a Service (IaaS)** - DigitalOcean, Linode, Rackspace, Amazon Web Services (AWS), Cisco Metapod, Microsoft Azure, Google Compute Engine (GCE) – Providers.
  - **Network as a Service (NaaS) –** Perimeter 81. Cloudflare Magic WAN. Cisco Plus NaaS. Akamai Aura Managed CDN.
  - **Storage as a Service (STaaS)** - Amazon Web Services (AWS), Microsoft Azure, Google Cloud, Oracle cloud, Box, Arcserve.
  - **Anything as a Service (Xaas)**

Disruptive Technologies Cont'd

2. Unmanned Aerial Vehicles - Drones

- Basically, a drone is a flying robot that can be remotely controlled or fly autonomously through software-controlled flight plans in their embedded systems, incorporating onboard sensors and GPS.

Disruptive Technologies Cont'd

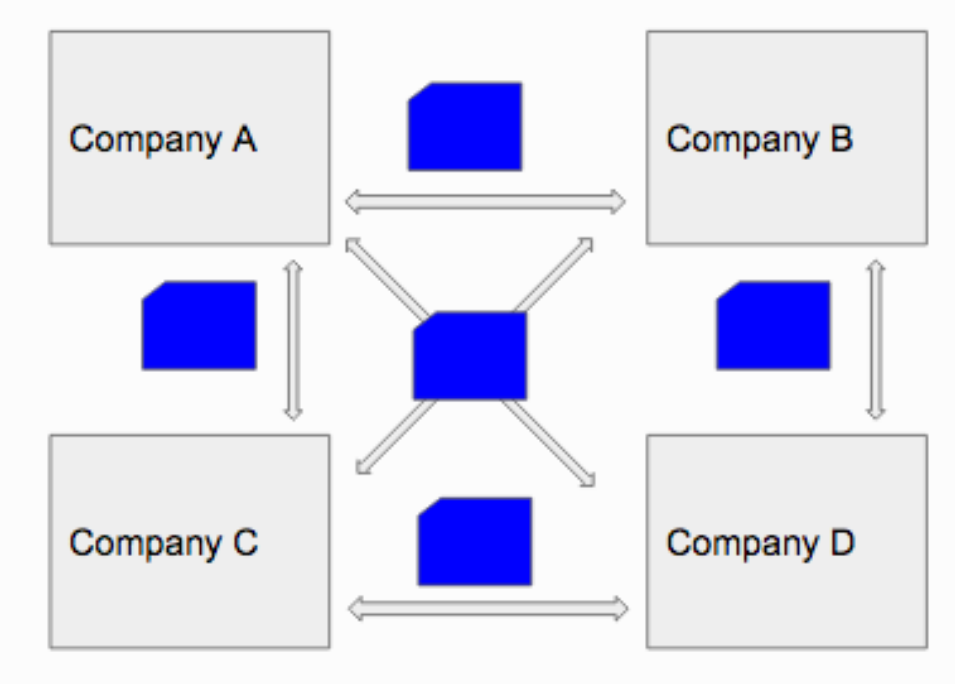
Application Areas:

- Intelligence gathering
- Military Warfare
- Search and rescue
- Monitoring & surveillance:
  - Traffic monitoring, weather monitoring and firefighting, videography, agriculture and even delivery services.

Disruptive Technologies Cont'd

3. Blockchain

- A decentralized database that stores a registry of assets and transactions across a peer-to-peer network.



Distributed Ledger
(each arrow represents a copy of one ledger)

Disruptive Technologies Cont'd

- Has 4 basic concepts:
  - Distributed shared ledger
  - Cryptography
  - Smart contracts
  - Consensus
- Application areas:
  - Government services (Voting, Registration, permit, etc.)
  - Identity and security (Access control, Authentication, etc.)
  - Trade (Agreements, Exchanges, etc.)
  - Internet of things (Drones, Cars, Robots, etc.)
  - Property (Real estate, Cars, etc.)
  - Financial services (Payment and Lending)

Disruptive Technologies Cont'd

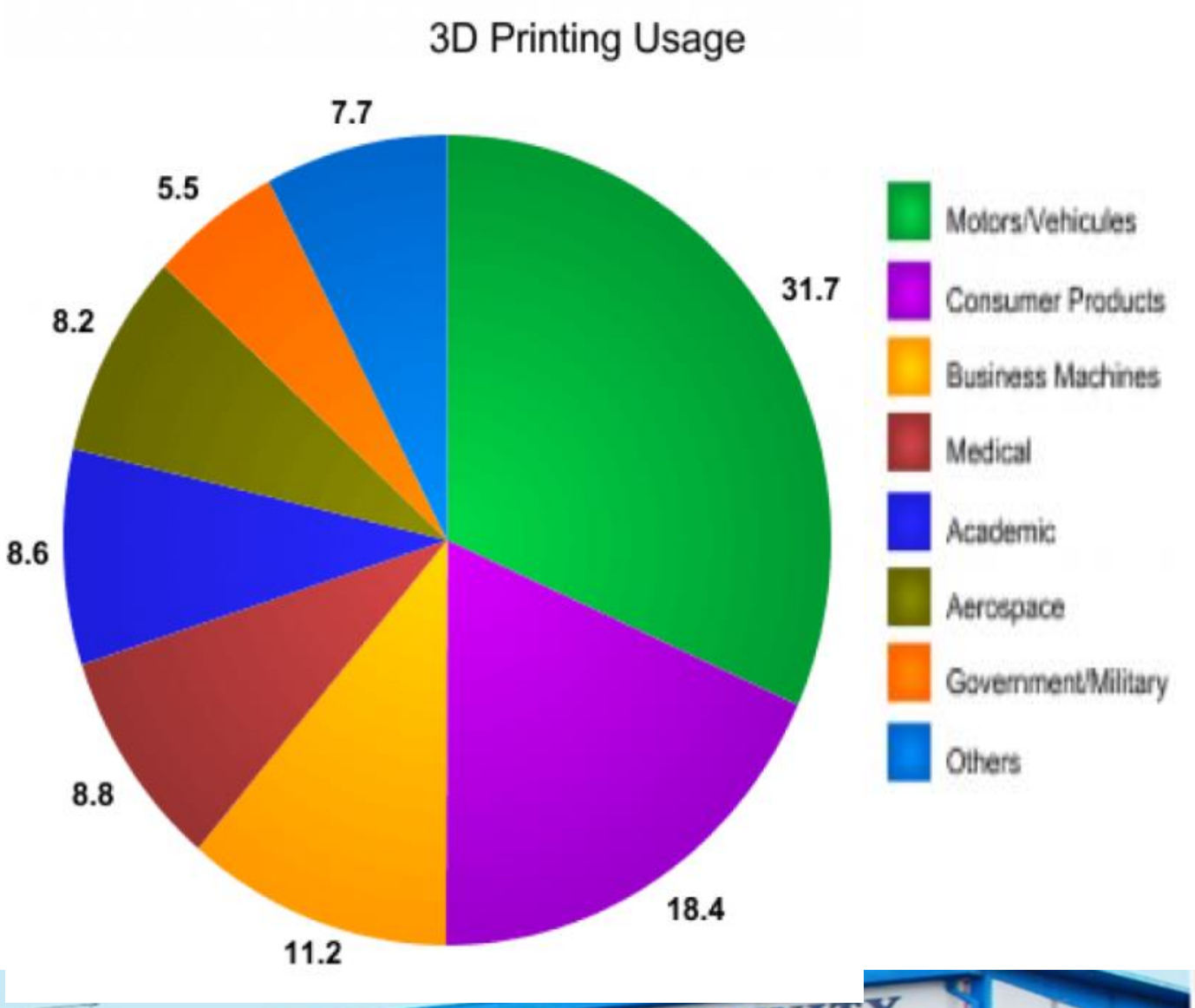
4. 3-D Printing

- 3D printing or additive manufacturing is a process of making three-dimensional solid objects from a digital file.
- Generally, It builds a three-dimensional object from a computer-aided design model, by successively adding materials layer by layer, which is why it is also called Additive Manufacturing.

Disruptive Technologies Cont'd

Advantages of 3D Printing

- No Overdose of Processing Cost
- Made Prototyping and Testing Simple and Faster
- Easy Risk Mitigation
- Easy Customization
- No Wastage of Material
- One-Step Process
- Can Create Complex Shapes



Disruptive Technologies Cont'd

5. Big Data

- The advent of the Internet, social media, and advances in digital sensors, communications, computation, and storage have created huge volumes of data.
- Today, people contend with data overload due to the exponential rate of data generation over the Internet and millions of devises, the scale of data is now measured in terms of exabytes (10^{18}) and zettabytes (10^{21}). As against:
  - Gigabytes - 10^{9}
  - Terabytes - 10^{12}
  - Petabytes - 10^{15}

Disruptive Technologies Cont'd

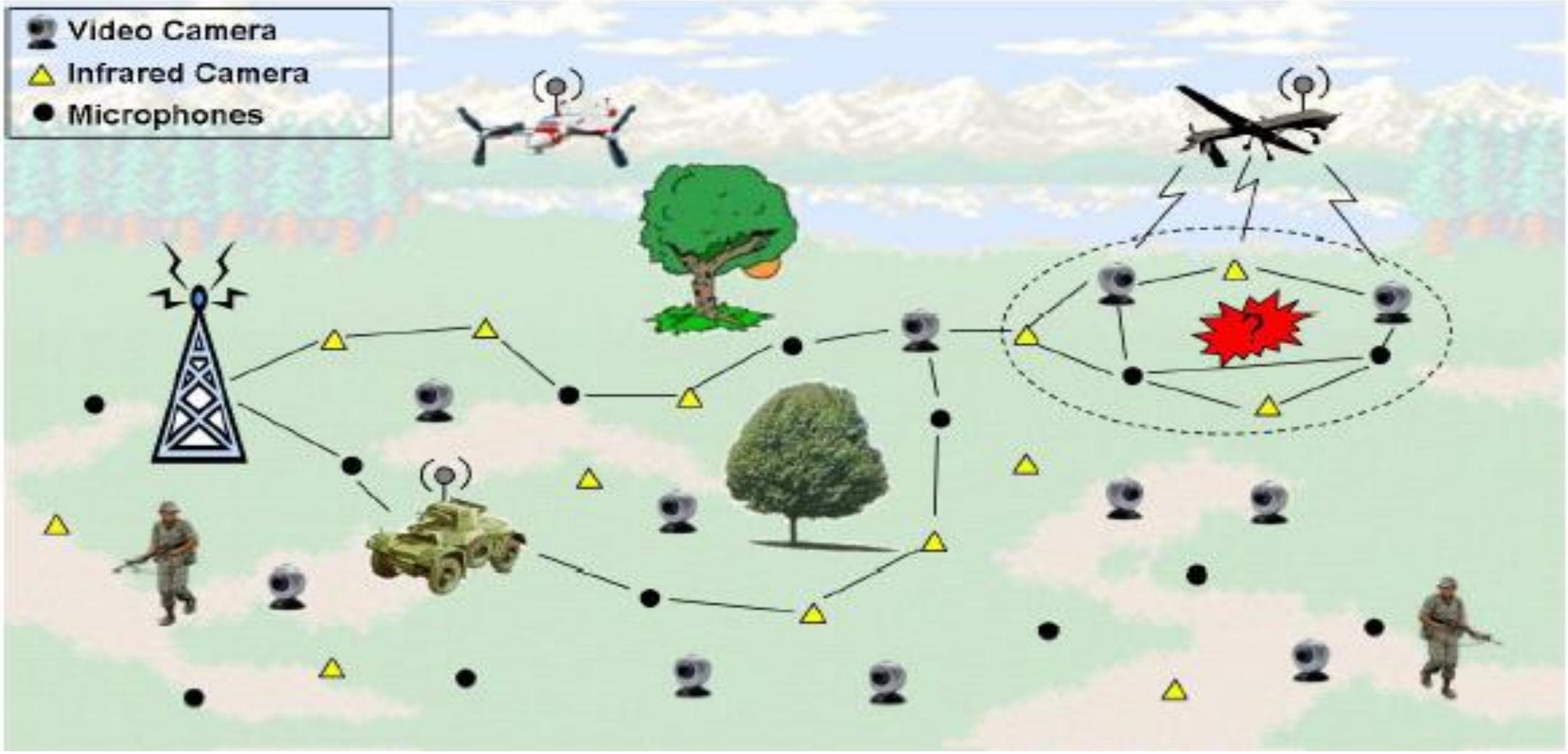
Disruptive Technologies Cont'd

6. Internet of Things/Everything (IoT/E):

- It refers to the set of technologies (devices and systems) that interconnect real-world sensors and actuators to the Internet.

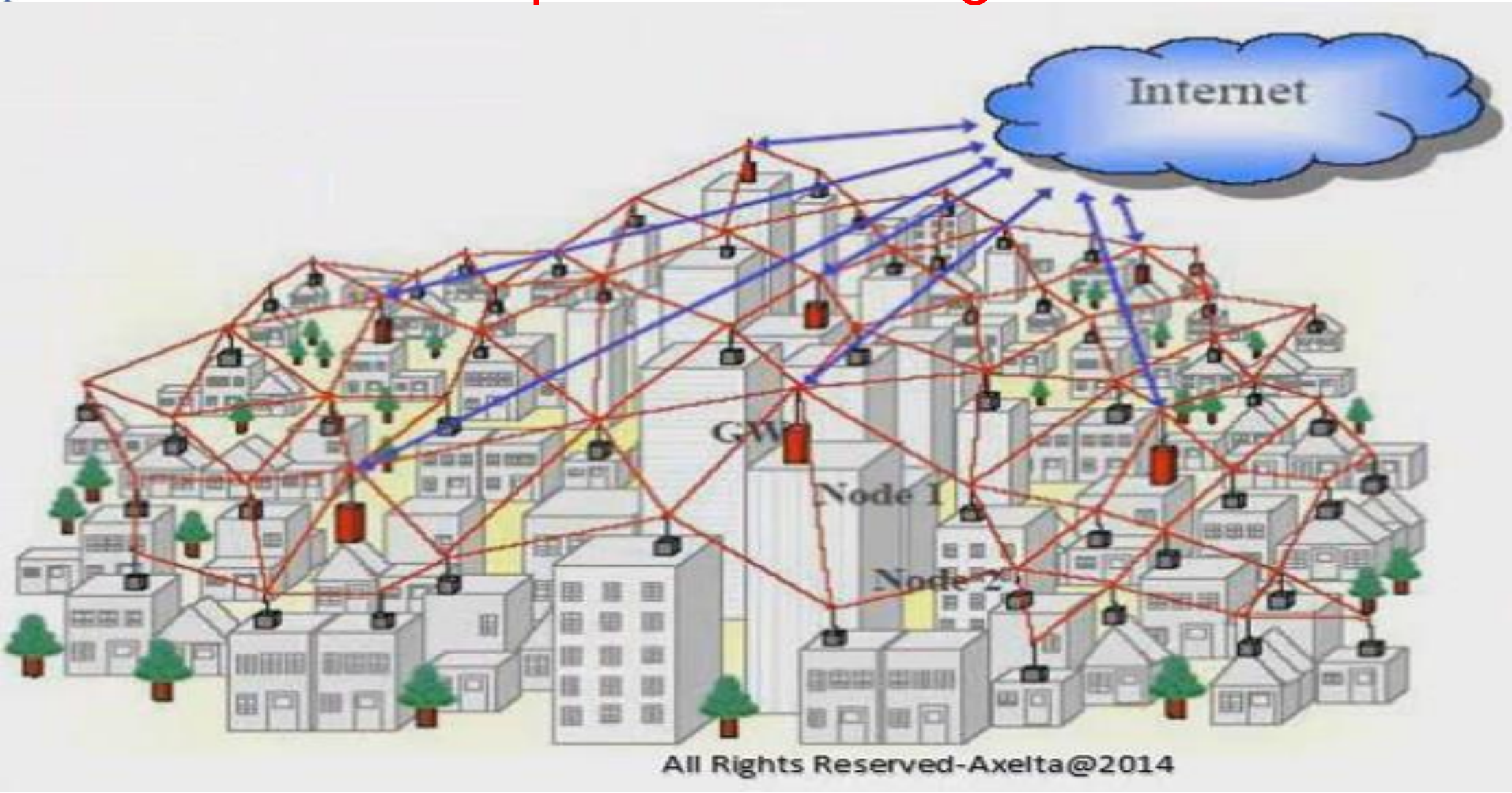
- What are the connected things?
  - Smart objects and meters, mobile phones, wearable devices – clothing, health care implants, smart watches and fitness devices;
  - Internet connected automobiles, home automation systems – thermostats, lighting, and home security;
  - Other measuring sensors for weather, traffic, ocean tides, road signal and others (Aazam et al., 2014).

Disruptive Technologies Cont'd



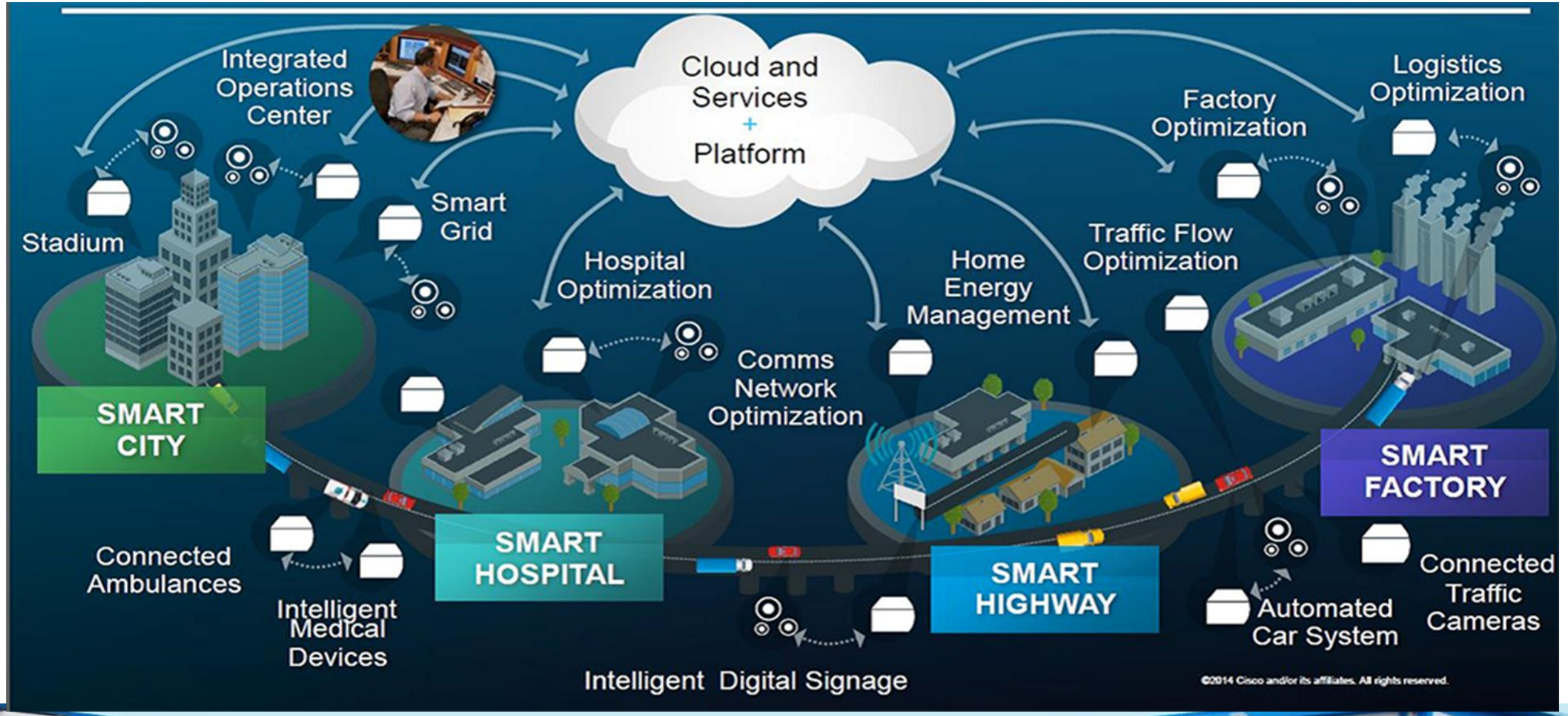
Application of Sensors and Drones in Surveillance

Disruptive Technologies Cont'd



Application of IoT in Smart Buildings

Disruptive Technologies Cont'd



CYBERPRENEURSHIP

Cyberpreneurship

Digital Entrepreneurship

- Bright minds do not only translate to innovativeness but entrepreneurship.

- According to Eleanor Roosevelt, “the future belongs to those who believe in the beauty of their dreams. Yes, dreams come true if you believe.”

Cyberpreneurship Cont'd

- Name: Bill Gates
- Date of Birth: October 28, 1955.
- Age: 67 years.
- Product/Company: Microsoft Corporation (Founded in 1975 at age 20).
- Total Number of users: 1.9 Billion.
- Personal Worth: $134.1 Billion.
- Companies Net-worth: $2,319.68 Billion as of April 01, 2022.

Cyberpreneurship Cont'd

- Name: Larry Ellison
- Date of Birth: August 17, 1944
- Age: 78 years
- Product/Company: Oracle Corporation (Founded in 1977 at age 33).
- Total Number of users: Over 25 million.
- Personal Worth: $112 Billion.
- Companies Net-worth: $218.82 Billion as of April 01, 2022.

Cyberpreneurship Cont'd

- Name: Steven Paul Jobs.
- Date of Birth: February 24, 1955 – October 5, 2011.
- Age: 56 years
- Product/Company: Apple Inc (Founded in 1976 at age 21)
- Total Number of users: Over 1 Billion.
- Personal Worth: $45 Billion.
- Companies Net-worth: $2,850 Billion as of April 01, 2022.

Cyberpreneurship Cont'd

- Name: Mark Elliot Zuckerberg.
- Date of Birth: May 14, 1984.
- Age: 38 years.
- Product/Company: Facebook (Founded in 2004 at age 20)
- Total Number of users: Over 2 Billion.
- Personal Worth: $77.3 Billion.
- Companies Net-worth: $545 Billion as of April 01, 2022.

Cyberpreneurship Cont'd

- Name: Evan Spiegel
- Date of Birth: June 4, 1990
- Age: 31 years
- Product/Company: Snapchat (Snap) Inc (Founded in September 16, 2011 at age 21)
- Total Number of users: Over 300 million.
- Personal Worth: $ 7.1 Billion.
- Companies Net-worth: $60.73 Billion as of April 01, 2022.

Cyberpreneurship Cont'd

- Name: Zhang Yiming.
- Date of Birth: April 5, 1983.
- Age: 39 years.
- Product/Company: TikTok.
- Total Number of users: Over 1 Billion.
- Personal Worth: $53.4 Billion.
- Companies Net-worth: $75 Billion as of April 01, 2022.

Cyberpreneurship Cont'd

- Name: Jack Ma.
- Date of Birth: September, 1964
- Age: 58 years.
- Product/Company: Alibaba (Founded 1999).
- Total Number of users: 1.28 Billion.
- Personal Worth: $43.4 Billion.
- Companies Net-worth: $165.39 Billion as of April 01, 2022.

Cyberpreneurship Cont'd

- Name: Olugbenga Agboola .
- Date of Birth: April 5, 1985
- Age: 37 years
- Product/Company: Flutterwave (Founded 2016
- Total Number of users: About 1 Billion
- Personal Worth: $5 Million
- Companies Net-worth: $ 3 Billion as of April 01, 2022.

Cyberpreneurship Cont'd

- Name: Shola Akinade.
- Date of Birth: June 1987.
- Age: 35 years.
- Product/Company: Paystack (Founded in 2015).
- Total Number of users: Over 80,000
- Personal Worth: $10 M.
- Companies Net-worth: $100 M as of April 01, 2022.

Relevant IT Skills

List of Relevant IT Certifications & Salaries

S/N	Certification	Salary		Certification	Salary ($)
1	Big Data Engineer:	$166,500	16	Google Certified Professional Cloud Architect	40,000 to 175,000
2	DevOps Engineer:	$120,000	17	AWS Certified Solutions Architect	114,000 to 149,000
3	Information Systems Security Manager:	$149,000	18	Certified Information Security Manager (CISM)	132,000 to 149,000
4	Mobile Apps Developer:	$135,750	19	Certified in Risk and Inf Systems Control (CRISC)	About 146,000
5	Applications Architect:	$144,500	20	Project Management Professional (PMP)	About 144,000
6	Data Architect:	$145,500	21	Certified Info. System Security Prof (CISSP)	About 141,000
7	Database Manager:	$137,500	22	Certified ScrumMaster (CSM)	About 135,000
8	Data Security Analyst:	$134,000	23	AWS Certified Solution Architect (Professional)	About 135,000

Relevant IT Skills

List of Relevant IT Certifications & Salaries

S/N	Certification	Salary		Certification	Salary($)
9	Data Scientist:	$129,000	24	Microsoft Certified: Azure Solutions Architect Expert	About 135,000
10	Network/Cloud Architect:	$146,000	25	Certified Information Systems Auditor (CISA)	About 132,000
11	Network/Cloud Engineer:	$115,250	26	AWS Certified Cloud Practitioner – Foundational	113,000 to 131,000
12	Senior Web Developer:	$124,750	27	VMware Certified Prof 6 – Data Center Virtualization (VCP6-DCV)	About 130,000
13	Site Reliability Engineer:	$123,250	28	Info. Tech. Infrastructure Library (ITIL) Foundation	About 129,000
14	Systems Engineer:	$107,000	29	Microsoft Certified: Azure Fundamentals	126,000
15	Software Engineer:	$123,250	30	Citrix Certified Associate – Networking (CCA-N)	About 125,000

RECOMMENDATIONS AND CONCLUSION

Recommendations and Conclusion Cont'd

The Dangers and Opportunities Ahead

- **Dangers Ahead**
  - 60 per cent of the 10 million students graduating from Africa's HEIs yearly remain unemployed 5 years after graduation.
  - 25 million jobs MUST be created yearly in Africa over 5 years to impact youths. How Far?
  - Two thirds of non-student youths are unemployed or vulnerably employed.

Recommendations and Conclusion Cont'd

The Dangers and Opportunities Ahead

- **Digital Technology Skills Opportunities**
  - Africa has only 700K developers compared to Latin America 2.2M.
  - Most of Africa's 21st Century jobs will come from digital technology skills.
  - DU has partnership with the New Horizons Solutions Ltd. to get the students of the University Certified in at least two (2) IT programmes.

Recommendations and Conclusion Cont'd

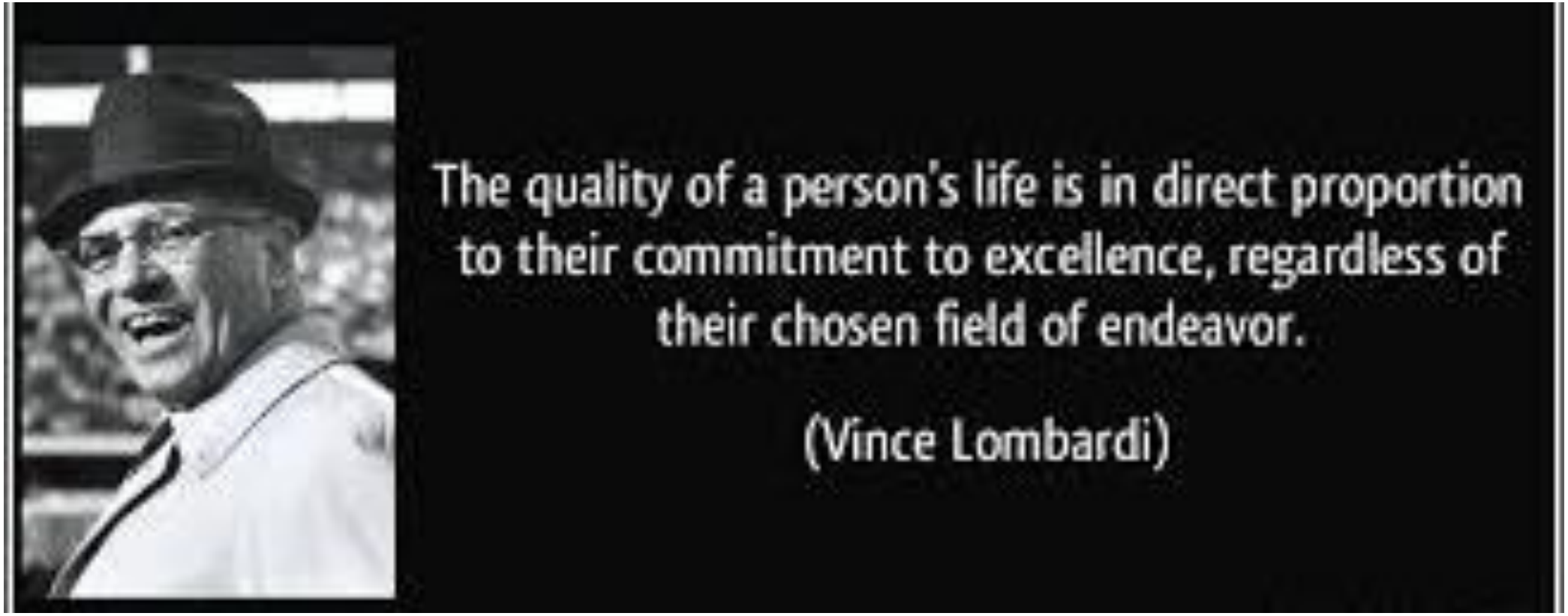
The Dangers and Opportunities Ahead

- **Digital Technology Skills Opportunities**
  - The good news here is the fact that Microsoft Inc has created equal opportunity platform for non-science/IT graduates - The "Community Developer" scheme.
  - This Scheme is fully sponsored my Microsoft through PMI
  - Currently Africa is not producing enough talents to make impact.

Recommendations and Conclusion Cont'd

- Let's correct the misconceptions about Private Universities
  - Most people see it as a business enterprise.
  - But they are institutions borne out to:
    - offer a rounded education that is rich in quality and morals to address the level of social vices in the country.
    - curb education tourism which is about ₦1tn annually.
- Nigerians should patronize Private Universities in the country where there is moral training with quality education and relatively cheaper and better than some public universities within and outside the country.

Recommendations and Conclusion Cont'd



Recommendations and Conclusion Cont'd

- On this note, I welcome the Matriculating Students to Dominion University.

Mission:

- **To educate a new generation of ethical and entrepreneurial leaders in Nigeria and Africa at large.**

Congratulations! Congratulations!! Congratulations!!!

TRINITY UNIVERSITY
Building on the Rock

Thank You