THE INSTITUTION OF ENGINEERS, BANGLADESH

BOARD OF ACCREDITATION FOR ENGINEERING AND TECHNICAL EDUCATION

TRANSFORMING EDUCATION FOR THE INDUSTRY: ENGINEER'S PERSPECTIVE IN ACHIEVING VISION 2041

PROF. DR. A.F.M. SAIFUL AMIN
CHAIRMAN
BOARD OF ACCREDITATION FOR ENGINEERING AND TECHNICAL EDUCATION
THE INSTITUTION OF ENGINEERS, BANGLADESH

KEYNOTE SPEECH

20 APRIL 2024, SATURDAY

RUPOSHI BANGLA GRAND BALL ROOM, INTERCONTINENTAL HOTEL, DHAKA

PREAMBLE

The educators in engineering programs prepare their graduates for the industry. The industry in Bangladesh is advancing to make up for its grave post-independence deficits. The foreseen national growth per the national visions needs to be visible in the international arena.

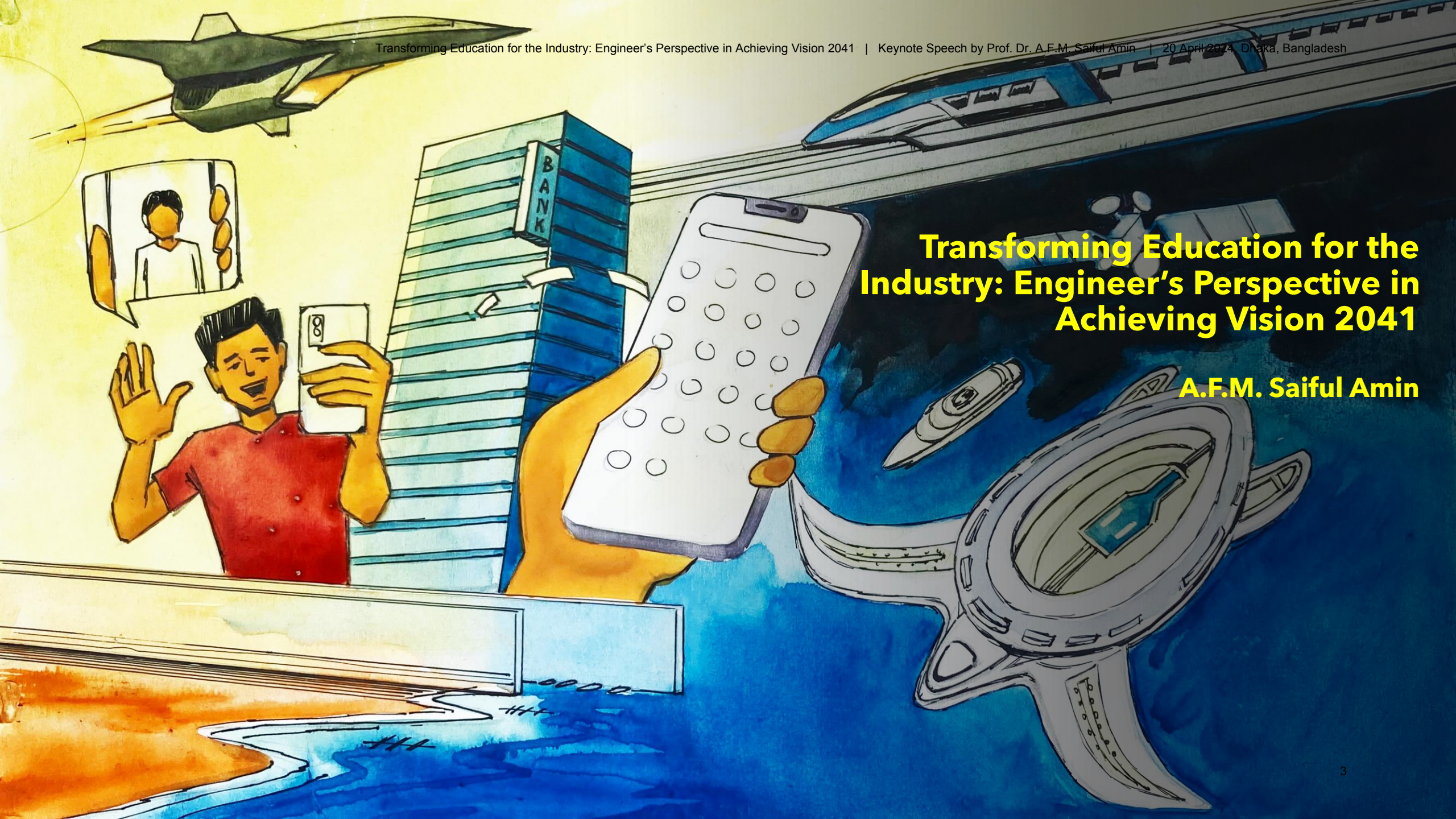
Vision 2041 highlights the need for accelerated developments at higher altitudes with the local customization of high-end up-to-date engineering and technological know-how, which must trickle down into the profession as the fruits of Industry 4.0 and the upcoming Industry 5.0.

Engineers from all disciplines will be the prime movers. Our current graduates enhance their knowledge and skills through lifelong learning while the educators prepare our future graduates with up-to-date knowledge. The academic arena and the industry floors need to be under the same roof for the acquisition and delivery of knowledge and skills and their enhancement. A transformation in the teaching and learning process is on the horizon. Engineering graduates will display their learning in the industry at home and abroad consistently over time. In the future, our industry will have to recruit more high-grade professionals from our accredited engineering programs, which are well recognized at home and abroad. The local availability of capable engineers is an attractive ingredient for foreign direct investments (FDIs). The contribution to the national economy from enhanced FDIs is unfathomable. The international job markets will see our graduates as active contributors to the causes of the world. The country can expect to see them as high-income wage earners to enrich our foreign-currency reserves. The visibility in circularity in investment in engineering education is imminent.

All these accomplishments are rooted in an internationally recognized accreditation system for engineering education, which the Board of Accreditation for Engineering and Technical Education (BAETE) of the Institution of Engineers, Bangladesh has been pursuing since 2003 for the entire spectrum of engineering in Bangladesh. BAETE's accreditation criterion, the "Program Outcomes and Assessment," focuses on the industry's needs and describes the industry's most sought attributes in engineering graduates. The "Interaction with Industry" criterion focuses on how the students are exposed to the relevant industries. The "Program Educational Objectives" provide a means to monitor the graduates' development for up to 5 years after graduation.

BAETE's accreditation has led to the formation of industrial advisory panels in many engineering programs to bring the industry closer to academia. Our continuous effort is to bring them even closer together. As BAETE updates its requirements for graduates with the incorporation of sustainable development goals, we must start with the right footing. Our goal is to set a guiding path for the programs to be on the right course, and we need the industry's close collaboration to do that.

With this aim, we are organizing the first national symposium with the theme "Transforming Education for the Industry: Engineer's Perspective in Achieving Vision 2041" to bring faculty members and industry personnel under the same roof.



Transforming Education for the Industry: Engineer's Perspective in Achieving Vision 2041

A.F.M. Saiful Amin

Decisive Steps

Extreme poverty is down, almost all children go to school, girls education is on rise

Women education in engineering increased significantly

Bangladesh has also imparted new lessons to the world to cope with challenges arising from climate change

Multipurpose shelters, embankments, early warning systems, cyclone-related fatalities have decreased by 100-fold

Global Targets vs Local Needs

UN Sustainable Development **Goals. Capacity** of engineering to meet those challenges will be tested.

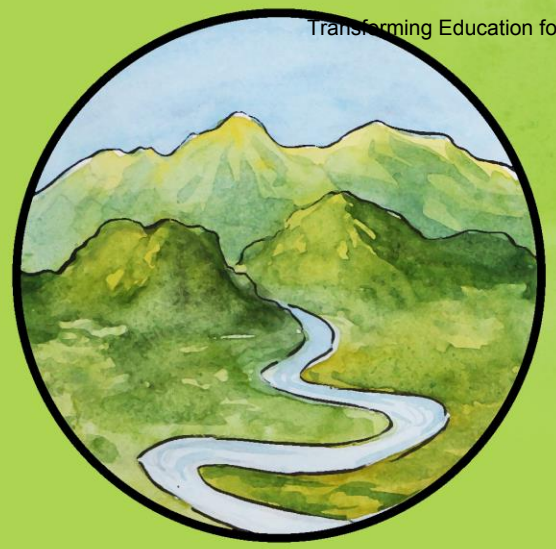
We have to evolve our profession, recognizing our strengths but also accepting our weaknesses and learning from them.

Past engineering brought great progress for past needs

We need decision tools that avoid creating a future that is a linear extension of poverty, inequality, climate, and environmental degradation, borne heavily and inequitably across the world.

Engineering creations are globally connected

- Engineering products
- End uses of the products
- Services
- Technology and knowhow
- Export and import of products and services
- Bench-markings are vital for local viability and international acceptability



Bangladesh is set to go global with local customizations

Vision 2041

DESPITE WORLD TARGETS, BANGLADESH DO HAVE HER OWN NATIONAL TARGETS

VISION 2041: TOWARDS A HIGH-INCOME ECONOMY

INSTITUTIONAL FOUNDATIONS

Institutions for human capital development – basic education and skill

Institutions for technology

- Strategy for Technology Breakthrough
  - Upgraded IT education at universities
  - A joint education and skill development program with foreign universities
  - Industry-university collaboration
  - UGC strengthened for ensuring accountability
  - Partnership and cooperation arrangements with recognized and reputed foreign businesses, industries, universities, think tanks and research institutions

PP2041: Chapter 2

Institutions for technology are crucial for human capital development.

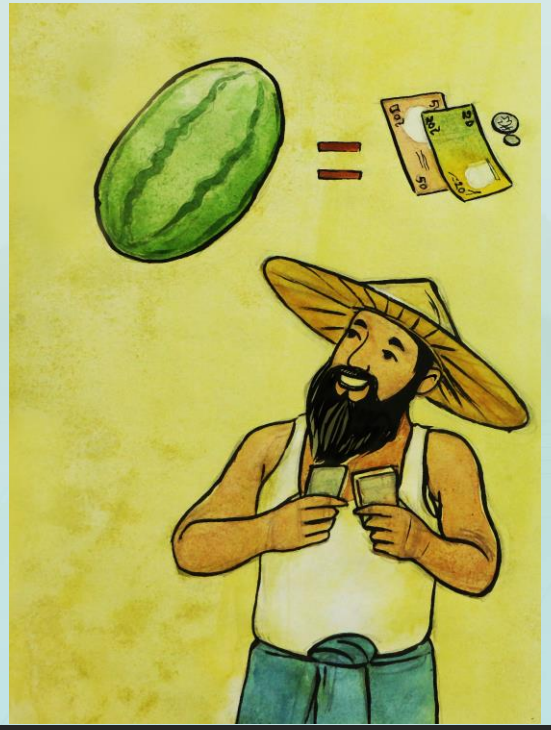
HUMAN DEVELOPMENT THROUGH QUALITY EDUCATION: HARNESSING THE DEMOGRAPHIC DIVIDEND

Private sector should focus on quality, equity, and gender equality in higher education. Public-private partnerships will be promoted by the University Grants Commission. Local government finances and private financing will support increased budget.

Strategy for higher education

- Strengthen role of private sector
- Enhance quality
- Promote equity
- Eliminate gender gap
- Strengthen University Grants Commission
- Strengthen public-private partnership in delivery of training
- Sharp increase in budget funding
- Mobilize local government finances
- Improve quality of public spending
- Boosting private financing of education and training

PP2041: Chapter 5



FOOD SECURITY AND RURAL DEVELOPMENT

Mechanized farming, flood management, irrigation, flood warning, water management

PP2041: Chapter 6

Bangladesh faces challenges in trade infrastructure, technology, and labor productivity.

INDUSTRIALIZATION, EXPORT DIVERSIFICATION, AND EMPLOYMENT GENERATION IN A FUTURISTIC WORLD ORDER

- Challenges with trade infrastructure
  - Technology and labor productivity
  - The enabling environment for trade
  - Trading under the Fourth Industrial Revolution and Beyond
  - Strengthening Competitive Advantage
  - Integration with Global Value Chains, attract FDI and Challenges
  - Challenges Associated with the Graduation from LDC Status
  - Sub-regional Cooperation for Integration in East and South East Asia
  - Trade Policy of the Future

    Foreign Direct Investment

PP2041: Chapter 7

Strengthening competitive advantage and integrating with global value chains are needed in the 4IR. Graduation from LDC status brings challenges. Sub-regional cooperation, trade policy, FDI, and technological changes are to be addressed.

INDUSTRIALIZATION, EXPORT DIVERSIFICATION, AND EMPLOYMENT GENERATION IN A FUTURISTIC WORLD ORDER

- Performance of the Service Sector in Trade
- Strategy for Developing Human Capital
- Technological Change, Automation and Implications for Employment in Bangladesh
- Deficiencies resulting high costs and difficulties in doing business
  - Port services
  - Road network
  - Railway system
  - Airfreight and Airport storage services

PP2041: Chapter 7

Hindrances to local firms' innovation and cooperation with foreign actors include lack of skilled workers, technological bottlenecks, and lack of entrepreneurship and management skills.

INDUSTRIALIZATION, EXPORT DIVERSIFICATION, AND EMPLOYMENT GENERATION IN A FUTURISTIC WORLD ORDER

- Shortage of skilled workers
- Technological bottlenecks
- Lack of entrepreneurship and management skills
- Local firms must have the capacity to innovate and acquire a basic level of technological standard so that cooperation is possible
- Availability of appropriately skilled engineer at a competitive price, which motivates established foreign actors to participate in joint ventures with local players

PP2041: Chapter 7

Make power sector financially viable, increase grid generation, improve efficiency, diversify fuel use, promote investment and trade, ensure access to electricity with pipeline and refinery expansion.

POWER AND ENERGY

Key Objectives and Targets

- Make power sector financially viable
- Total grid-based generation capacity of electricity
- Maximum Peak Demand Based on PSMP 2016 base case
- Increase efficiency of energy use as well as reducing the system loss
- Diversify fuel use in power generation capacity to balance use of low-cost fuel with low carbon content of the fuel mix
- Increase private sector investments in electricity, gas, and other energy supply
- Encourage energy trade
- Access to electricity
- Installation of petroleum pipeline
- Refinery capacity

PP2041: Chapter 8

POWER AND ENERGY

Strategy and Policies

- Adopt a least-cost power generation expansion path
- Promote supply of low-cost primary energy
- Develop the required infrastructure for primary fuel
- Ensuring investment balance between generation, transmission and distribution
- Promote efficient use of installed capacity
- Promote private investment in energy
- Further expand power trade
- Ensure proper energy pricing policy
- Strengthening power and energy institutions

Promote low-cost energy supply, develop infrastructure, balance investment, encourage efficiency, attract private investment, expand power trade, establish proper pricing.

PP2041: Chapter 8

INNOVATION ECONOMY THROUGH FOSTERING ICT AND SCIENTIFIC RESEARCH

- Education and R&D capacity
- Strengthening of the ICT ecosystem is stimulating vibrancy in the industry
- Digitization and service transformation
- Moving from factor-driven stage to innovation-based economy
- Driving the growth of ICT and innovation industry
- Leveraging the Fourth industrial revolution

PP2041: Chapter 9

Leveraging digital and innovation opportunities through labor advantage, technology fusion, capacity creation, and industry-focused R&D.

INNOVATION ECONOMY THROUGH FOSTERING ICT AND SCIENTIFIC RESEARCH

Strategy of Exploiting Digital and Innovation Opportunities

- Fusion of Labor Advantage with Science and Technology Innovation
- Creating Capacity for Implementing the Strategy
  - National Innovation Agency
  - Sheikh Hasina Institute for Frontier Technologies
  - Industry Focused R&D labs
  - Upgrade University Education and Research to Support Innovation

PP2041: Chapter 9

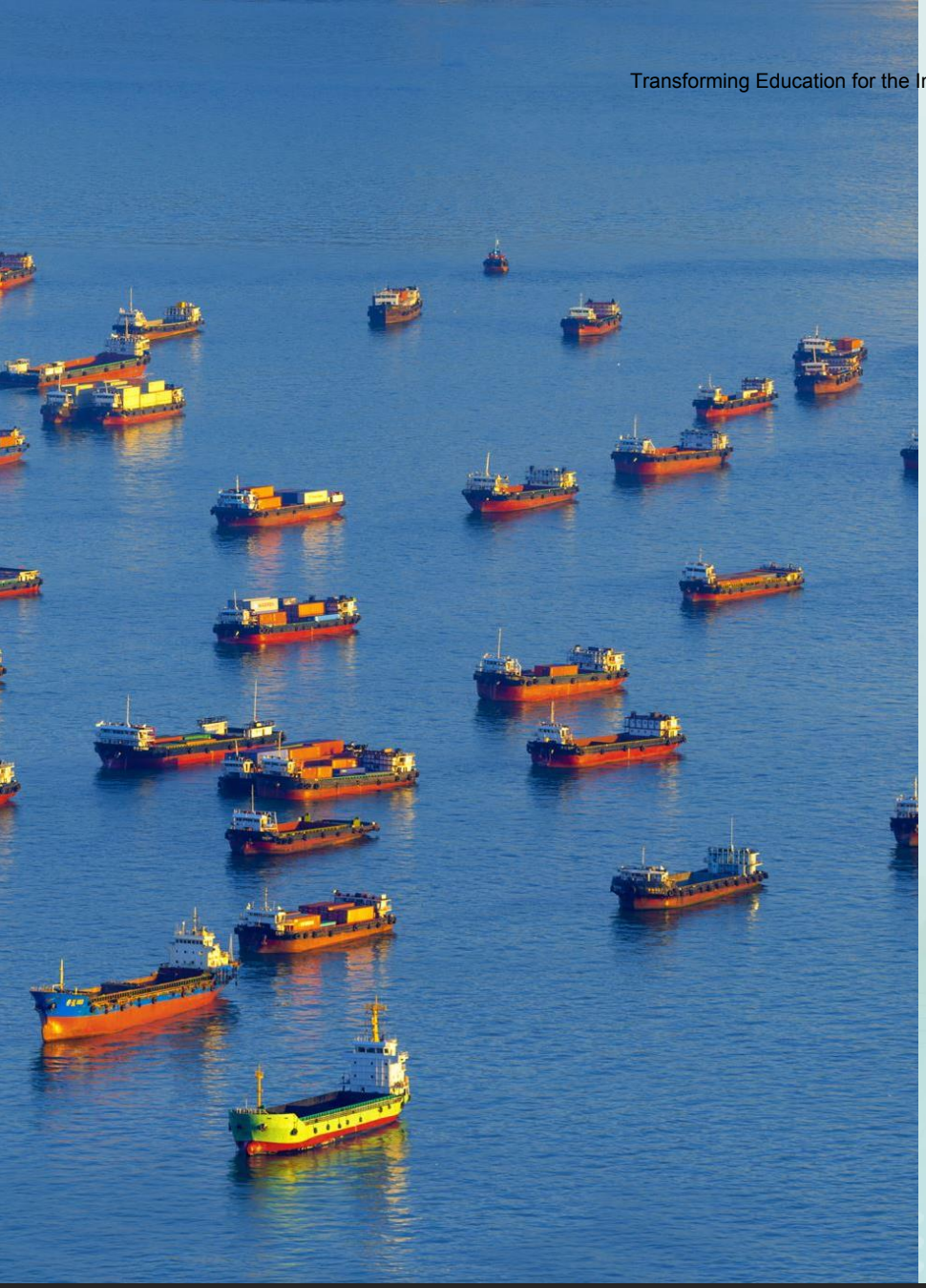
TRANSPORT AND COMMUNICATION INFRASTRUCTURE FOR SUSTAINED RAPID GROWTH

Transport Sector Strategy

- Strengthening long-term planning and priority setting
- Creating balanced inter-modal transport facility
- Strengthening implementation capacity
- Ensuring sustainable financing of transport infrastructure
- Developing and implementing key policies for ensuring quality and reliability of transport services
- Strengthening management capabilities and efficiency of public transport authorities

Transport Strategy to enhance long-term planning, inter-modal facilities, implementation capacity, financing, reliability, and efficiency in the sector.

PP2041: Chapter 10



TRANSPORT AND COMMUNICATION INFRASTRUCTURE FOR SUSTAINED RAPID GROWTH

Transport Sector Targets

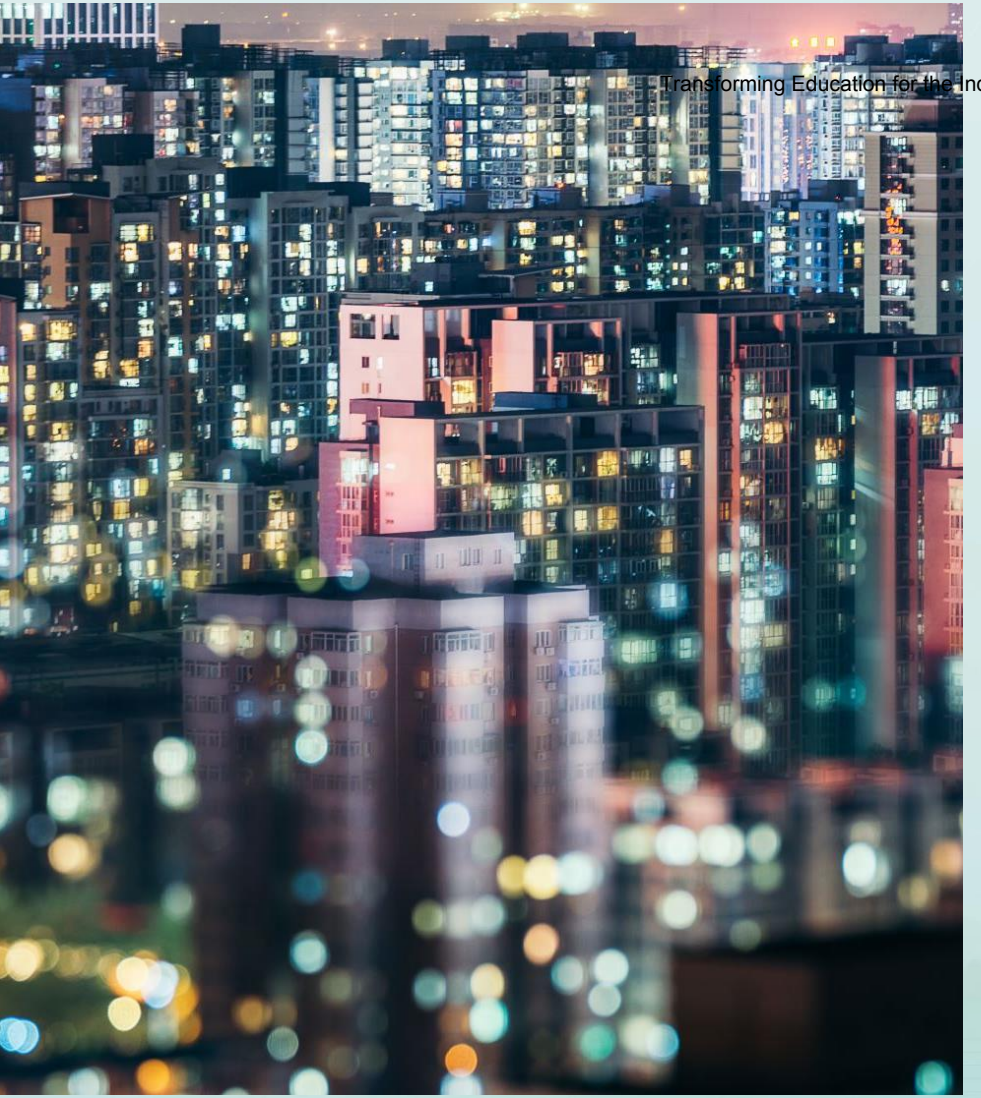
- Passenger Traffic
- Freight Traffic
- Air Traffic
- Sea Port Cargo
- Traffic
- Urban mass transit
- Infrastructure quality

PP2041: Chapter 10

MANAGING THE URBAN TRANSITION

Strategy for Urban Reforms

PP2041: Chapter 11



Urban sector goals: fix urban population, primary cities' population, Dhaka Metropolitan City, 7 others, household electrification, water access, toilets, urban poverty.

MANAGING THE URBAN TRANSITION

Core Objectives and Targets for the Urban Sector

- Share of urban population in total Population
- Number of primary cities
- Share of Dhaka Metropolitan City in total urban population
- Share of 7 other primary cities in total urban population
- Percent of households with electricity
- Percent of households with tap water connectivity
- Percent of households with water-sealed sanitary toilets
- Percentage of households with sewerage connection
- Incidence of urban poverty

PP2041: Chapter 11

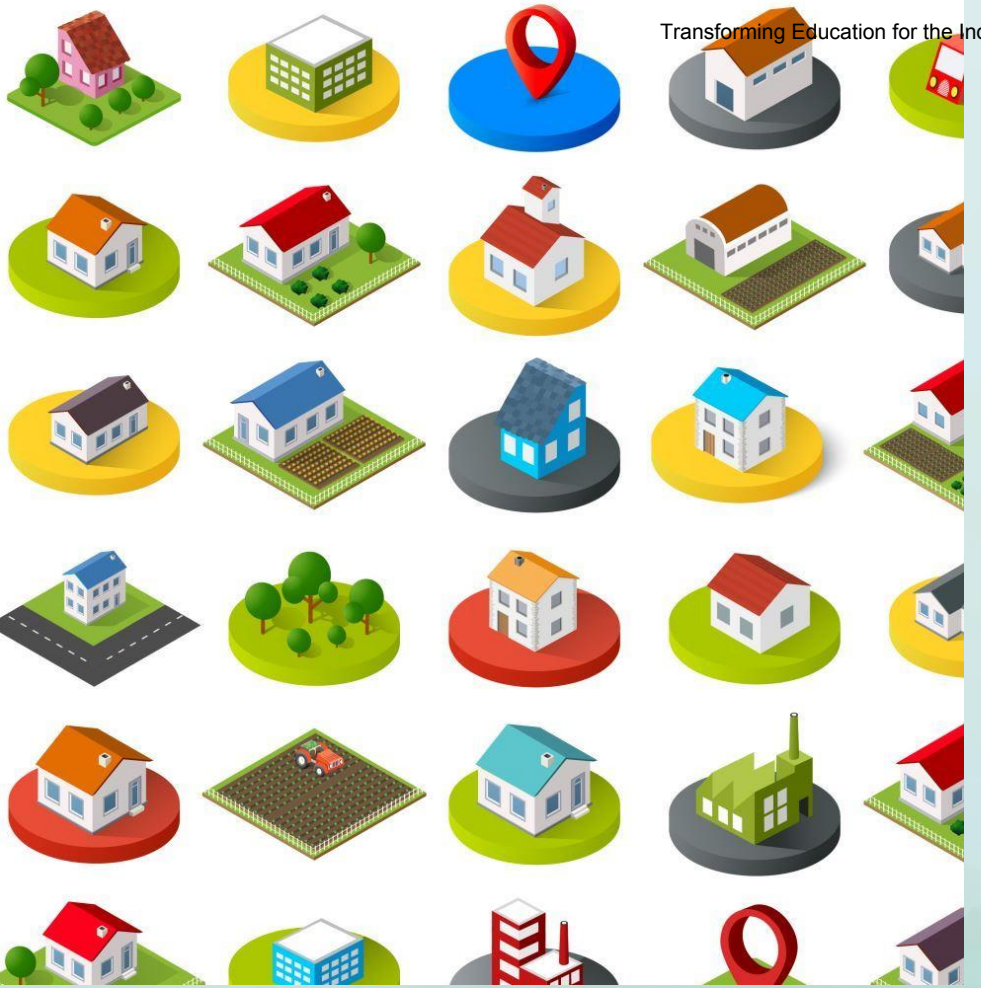
MANAGING THE URBAN TRANSITION

Urban sector objectives is also to reduce slum dwellers, improve waste disposal and wastewater treatment, increase urban LGI spending and taxes as percentage of government spending and GDP, and expand green areas in Dhaka and other major cities.

Core Objectives and Targets for the Urban Sector

- Percent of household living in slums
- Percent of urban centers with modern waste disposal facilities
- Percent of urban centers with wastewater treatment facilities
- Share of urban LGI spending in total government spending
- Urban LGI spending as percentage of GDP
- Urban LGI taxes as percentage of total taxes
- Urban LGI taxes as a percentage of GDP
- Green area Dhaka
- Green area other 7 major cities

PP2041: Chapter 11



Maintain urban water bodies to meet quality standards. Enhance air quality. Prevent flooding and enforce zoning laws. Upgrade traffic signals. Improve city transportation.

MANAGING THE URBAN TRANSITION

Core Objectives and Targets for the Urban Sector

- Percent of urban water bodies preserved with 100% compliance with water quality standards
- Air quality
- Percent of cities flood free with proper drainage
- Compliance with zoning laws
- Compliance with parking laws
- Urban streets/roads with modern traffic signals
- Primary cities with mass transit options

PP2041: Chapter 11

Incorporating environmental costs in economics, through the Delta Plan, reducing pollution, removing fuel subsidies, and adopting green taxes.

ENVIRONMENT, CLIMATE, BLUE ECONOMY

SUSTAINABLE ENVIRONMENT, CLIMATE RESILIENT NATION IN A DYNAMIC DELTA, AND UNLOCKING THE POTENTIAL OF A BLUE ECONOMY

- Strategies for Environmental Management and a Climate Resilient Delta Nation
  - Integrate Environmental Costs into the Macroeconomic Framework
  - Implement the Delta Plan to Build Resilience and Reduce Vulnerability to Climate Change
  - Reduce Air and Water Pollution
    - Removal of fuel subsidies
    - Adoption of green tax on fossil fuel consumption
    - Taxation of emission from industrial unit
    - Prevention of surface water pollution
    - Groundwater Sustainability

PP2041: Chapter 12

Sustainable waste management, urban and rural water and sanitation access, and forestry resource conservation.

ENVIRONMENT, CLIMATE, BLUE ECONOMY

SUSTAINABLE ENVIRONMENT, CLIMATE RESILIENT NATION IN A DYNAMIC DELTA, AND UNLOCKING THE POTENTIAL OF A BLUE ECONOMY

- Waste Management
- Ensure Sustainable Management of Forestry Resources

- Core Objectives and Targets
  - Share of urban population in total population
  - Urban households with tap water connectivity
  - Urban households with water-sealed sanitary toilets
  - Urban households with modern sewerage connection
  - Rural households with tap water connectivity
  - Rural households with water-sealed sanitary toilets

PP2041: Chapter 12

Rural homes with safe sewerage. Poverty rate. Percentage in slums. Urban centers with wastewater treatment. Environmental spending.

ENVIRONMENT, CLIMATE, BLUE ECONOMY

SUSTAINABLE ENVIRONMENT, CLIMATE RESILIENT NATION IN A DYNAMIC DELTA, AND UNLOCKING THE POTENTIAL OF A BLUE ECONOMY

- Rural households with safe sewerage connection
- Incidence of poverty
- Percent of population living in slums
- Percent of household living in slums
- Percent of urban centers with waste water treatment facilities
- Core environmental spending
- Spending by environment coordinating entity
- Application of polluter pays principle
- Carbon tax

PP2041: Chapter 12

Dhaka and major cities' green areas, disaster readiness, urban water bodies' compliance, air quality, flood-free cities, land degradation, forest cover, habitat/biodiversity ranking, environmental performance ranking.

ENVIRONMENT, CLIMATE, BLUE ECONOMY

SUSTAINABLE ENVIRONMENT, CLIMATE RESILIENT NATION IN A DYNAMIC DELTA, AND UNLOCKING THE POTENTIAL OF A BLUE ECONOMY

- Green area for Dhaka-major cities
- Disaster readiness
- Urban water bodies compliance with water quality standards
- Air quality
- Percent of cities flood free with proper drainage
- Percent of land degraded
- Area under forest cover
- Protection of Habitat and Biodiversity International Ranking
- Environmental Performance Index International Ranking

PP2041: Chapter 12

ENVIRONMENT, CLIMATE, BLUE ECONOMY

SUSTAINABLE ENVIRONMENT, CLIMATE RESILIENT NATION IN A DYNAMIC DELTA, AND UNLOCKING THE POTENTIAL OF A BLUE ECONOMY

- Strengthen Environmental Coordination and Environmental Institutions
- Unlocking the Potential of the Blue Economy
- Strategy for the Blue Economy

PP2041: Chapter 12

Technology Institutions for skilled human capital development to the best use of population dividend

Takeways-1

1. Technology institutions are crucial for developing skilled human capital, emphasizing quality, equity, and gender equality in higher education.
2. Industry-university collaboration has to be effective
3. Strengthen University Grants Commission
4. Strengthen public-private partnership in skilled manpower delivery
5. Local firms face innovation barriers due to skill, technology, and entrepreneurial deficiencies.

Integrate the industry with the engineering education for the industry needs

Takeways-2

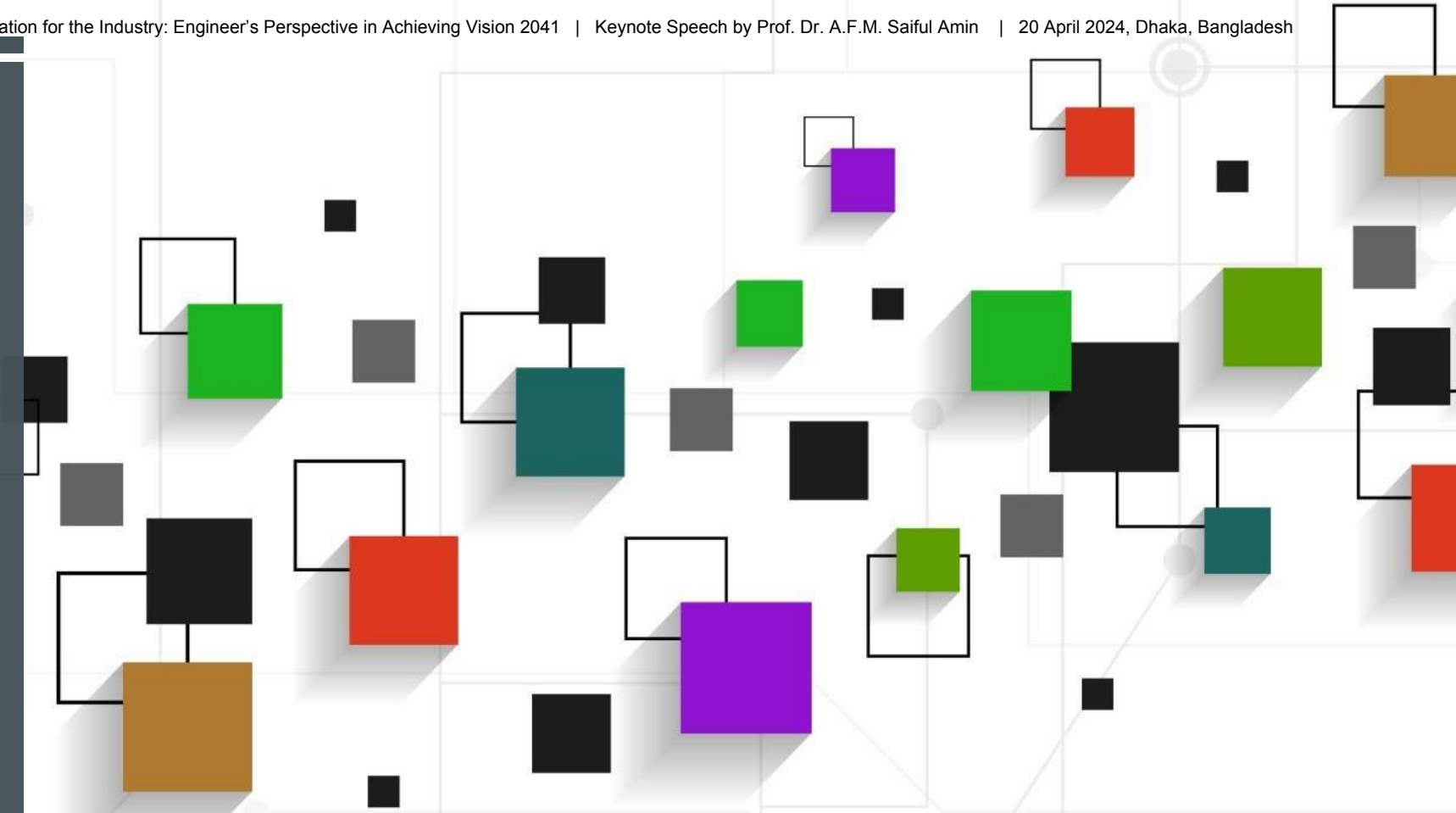
1. Trade, technology, and productivity challenges should be overcome through competitive advantage, global value chain integration.
2. Mechanization and water management are vital for agriculture for food security.
3. The power sector has to rely on fuel diversification, on low-cost energy solutions, power trade optimization. Investments are to be attracted for broad electricity access.
4. Transport strategy targets long-term planning and efficiency in passenger, freight, air, and sea cargo, including mass transit enhancements.

Academia-Industry Interaction has to value the business in the everchanging social and global scenarios to meet human needs.

Takeways-3

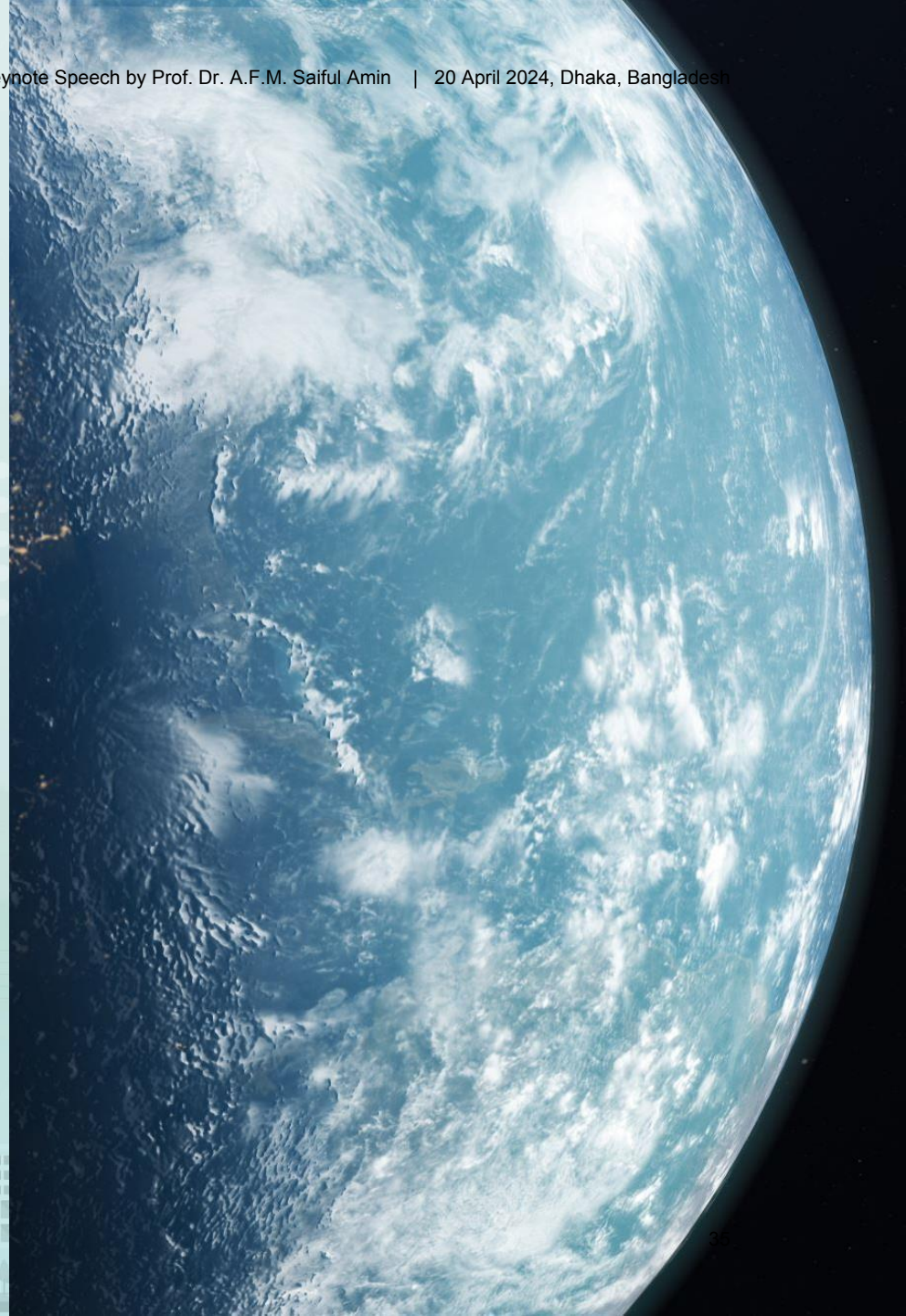
1. Strengthening education, R&D, and the ICT ecosystem is necessary for industry digitization infrastructure.
2. LDC graduation obstacles are to be addressed with sub-regional cooperation, trade policy adjustments, FDI, and tech adaptation.
3. Urban planning focuses on better living standards, slum reduction, waste management, green area expansion, and preserving water and air quality.
4. Environmental goals advocate for sustainable waste management, improved water and sanitation access, conservation, and incorporating environmental costs in economic decisions.

ENGINEERING THE FUTURE: ACADEMIA & INDUSTRY SYNERGY



WHO ARE THE ENGINEERS?

- Scientist discover the world that exists; Engineers create the world that never was: Theodore von Kármán
- The creativity of engineers changes the world: UNESCO
- Engineering is the knowledge and practice of problem solving



SKILLS GAP ANALYSIS

- Employers do not get industry-fit skilled manpower even from the top universities of the country
- BIDS found that the industrial sectors of the country are experiencing a 30% skills gap
- Specific industries facing moderate to high skills gaps
- Only 3.65% update themselves; at specific sectors only 1.35% are updating themselves
- The World Economic Forum quantifies that by 2022 no less than 54% of all employees will require significant reskilling and upskilling in the world

RESKILLING AND UPSKILLING

- Learning new sets of competencies to transition to a completely new role
- Learning new competencies to stay in the current role, due to the change in skills required, or adding certain competencies for career progression respectively

EDUCATOR'S ROLE

The educators in engineering programs prepare their graduates for the industry

Academia and Industry shall work together for mutual benefits under the same roof

BAETE PERSPECTIVES

- An internationally recognized accreditation system for engineering education for the entire spectrum of engineering in Bangladesh
- BAETE's accreditation criterion, the "Program Outcomes and Assessment," focuses on the industry's needs and describes the industry's most sought attributes in engineering graduates
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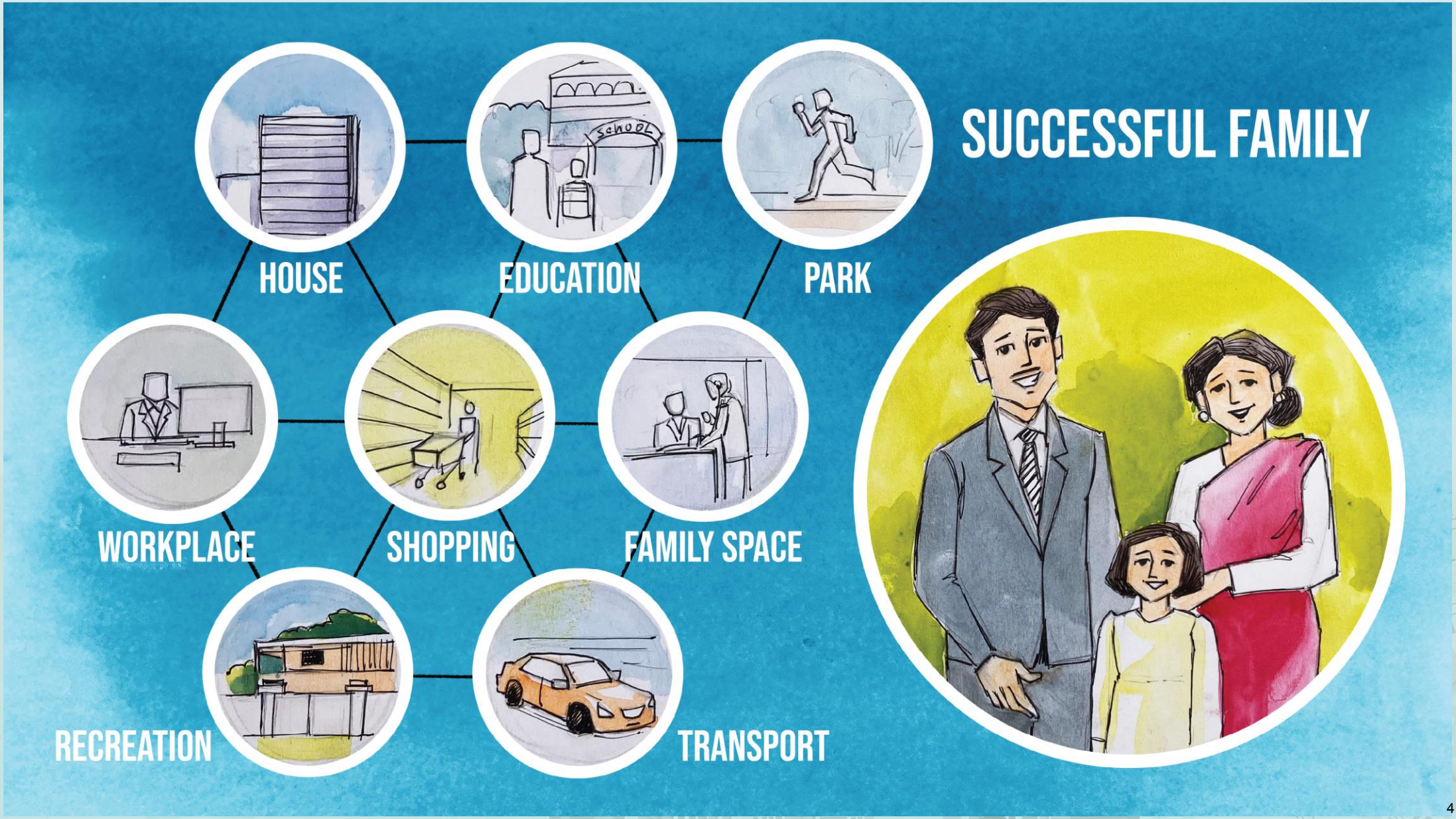
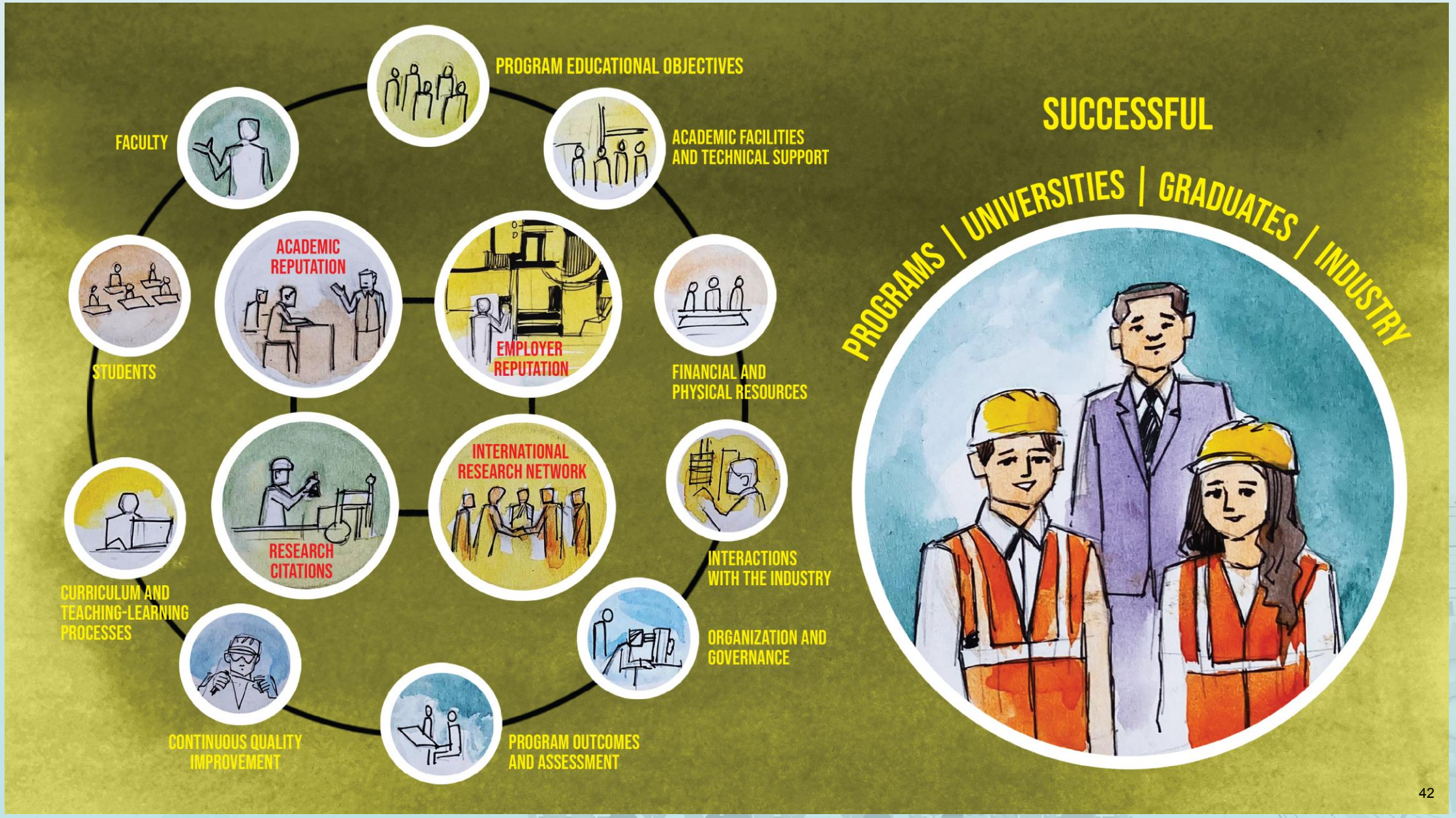
BAETE PERSPECTIVES

As BAETE updates its requirements for graduates with the incorporation of sustainable development goals, we must start with the right footing

Our goal is to set a guiding path for the programs to be on the right course, and we need the industry's close collaboration to do that

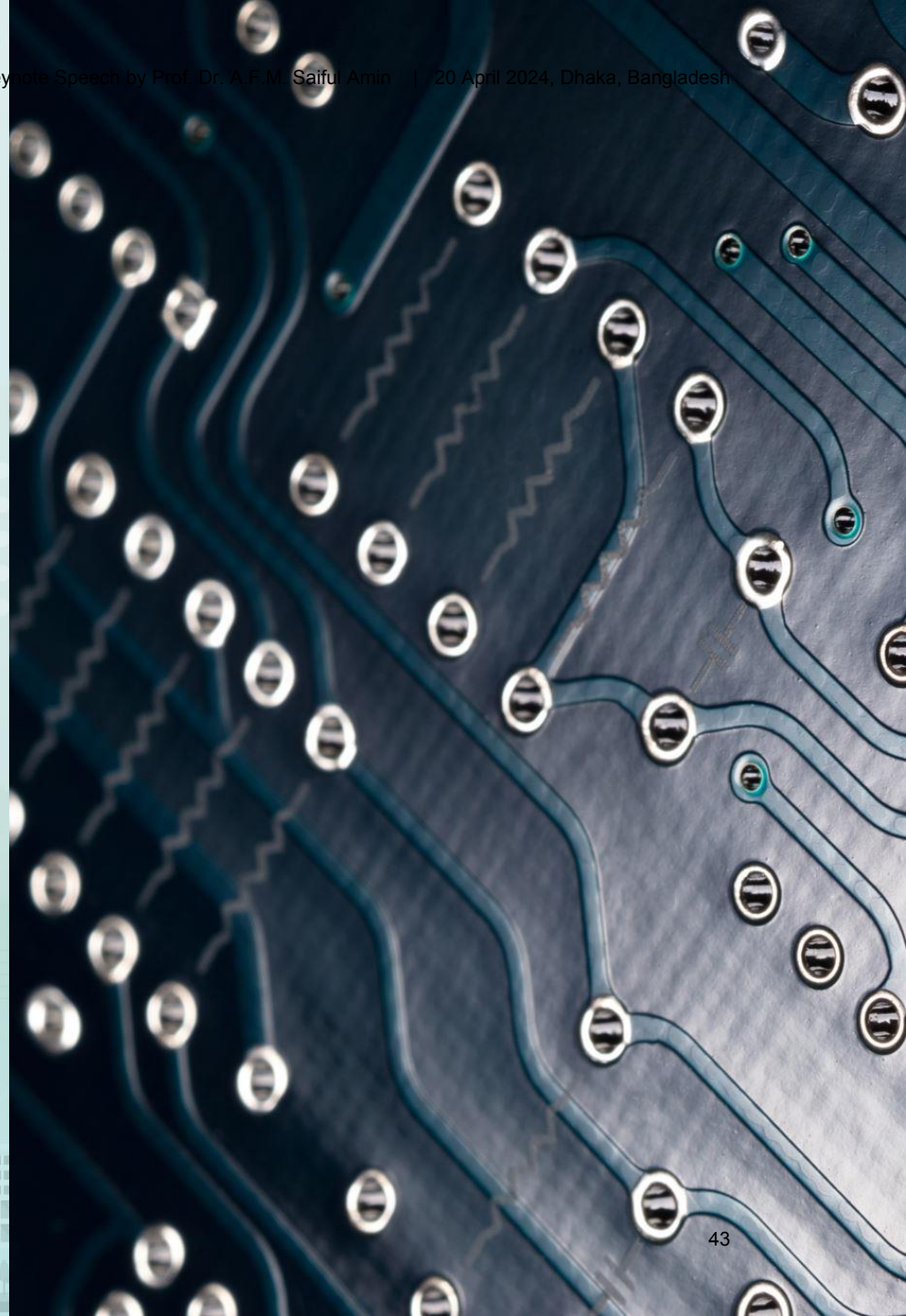
BAETE and Industry shall work together to set the requirements that the Engineering Programs shall put in their graduates


SUCCESSFUL FAMILY
HOUSE
EDUCATION
PARK
WORKPLACE
SHOPPING
FAMILY SPACE
RECREATION
TRANSPORT
SCHOOL


PROGRAM EDUCATIONAL OBJECTIVES
ACADEMIC FACILITIES AND TECHNICAL SUPPORT
FINANCIAL AND PHYSICAL RESOURCES
INTERACTIONS WITH THE INDUSTRY
ORGANIZATION AND GOVERNANCE
PROGRAM OUTCOMES AND ASSESSMENT
CONTINUOUS QUALITY IMPROVEMENT
CURRICULUM AND TEACHING-LEARNING PROCESSES
STUDENTS
FACULTY
ACADEMIC REPUTATION
EMPLOYER REPUTATION
INTERNATIONAL RESEARCH NETWORK
RESEARCH CITATIONS
SUCCESSFUL
PROGRAMS | UNIVERSITIES | GRADUATES | INDUSTRY

GLOBAL PARADIGM SHIFTS

- During the last two decades, profound technological changes have taken place around us, supported by disruptive advances, both on the software and hardware sides
- An amalgamation of information, communication, and artificial intelligence is taking place, as well as the cross-fertilization of a wide range of concepts, referred to as the digital transformation



INDUSTRY 4.0 TO INDUSTRY 5.0

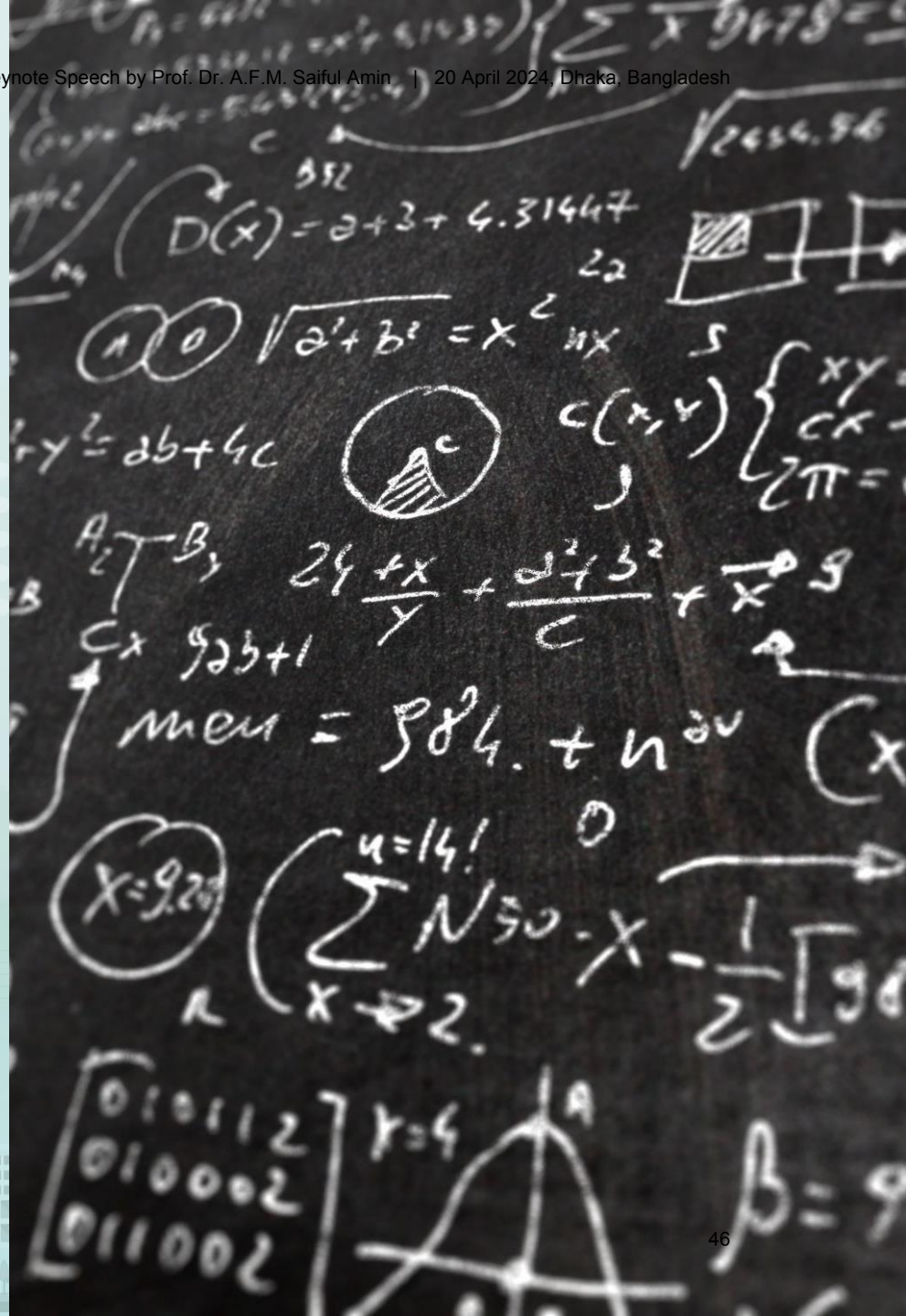
- While the discussion on how to operationalize the new intelligent systems of the fourth industrial revolution, Industry 4.0, is still going on; the dominant characteristics of the fifth industrial revolution, Industry 5.0 – going beyond producing goods and services for profit – requires all to think and act differently
- Industry 5.0 – or Society 5.0 – aims to solve social problems with the help of integration of physical and virtual spaces that would be achieved by Industry 4

MOVING TOWARDS CONVERGENCE

- The boundaries between different disciplines are eroding
- Engineering education has to transform in the future
- Skills must prevail over degrees to deal with challenges posed by the trends of the fifth industrial revolution

EARLIEST 1918 RECONGNITIONS OF ACADEMY-INDUSTRY COLLABORATION

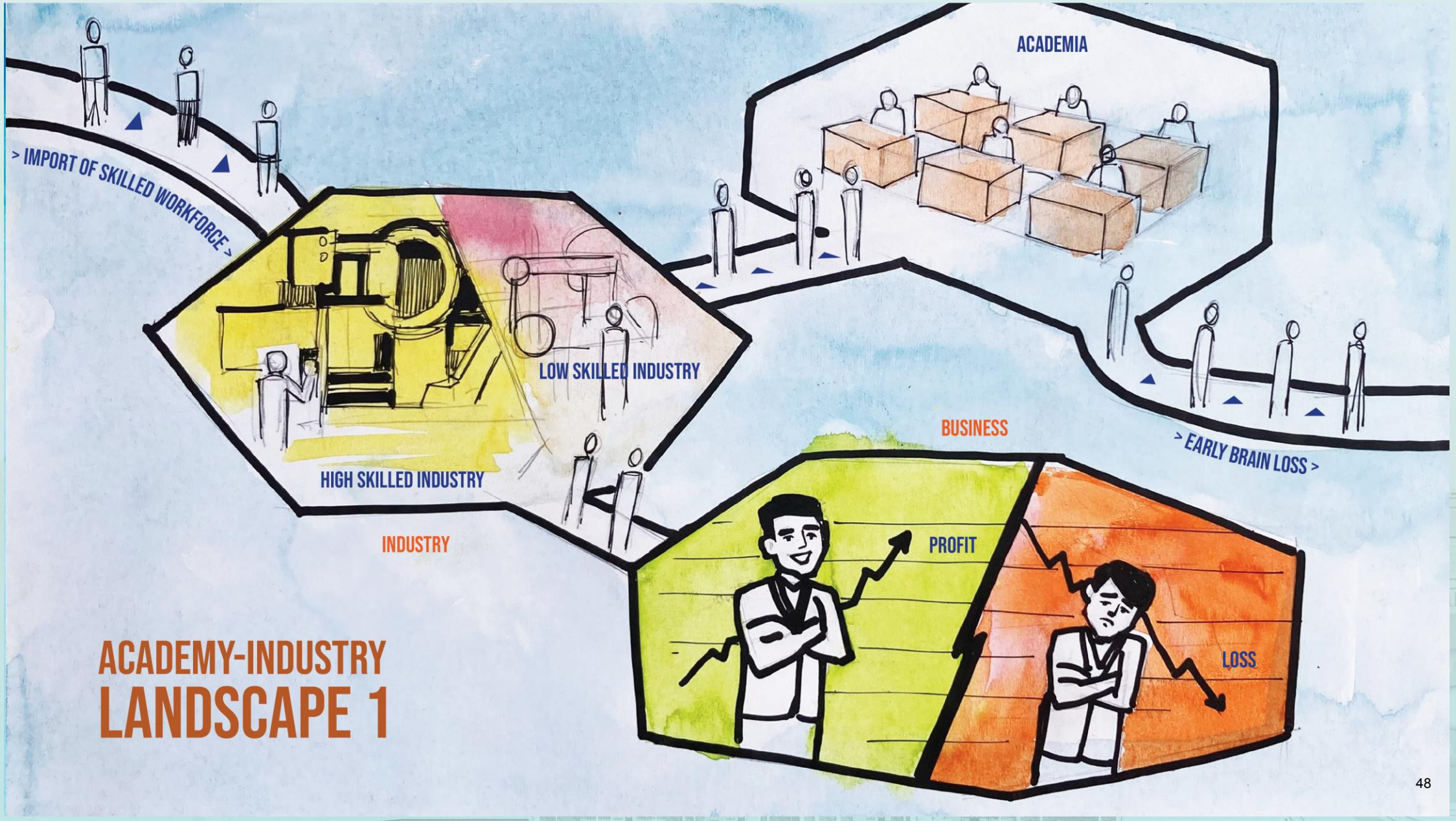
- A "case" based approach
- A "dynamo" could be the "case" and the students would start with an analysis of the case for the purpose of discovering the fundamental physical and/or mechanical principles involved in its operation
- This leads the student from practical applications by analysis to a comprehension of the theory, instead of from theory to applications
- Engineering education has a very strong emphasis on science and mathematics to the neglect of social science, design and practice

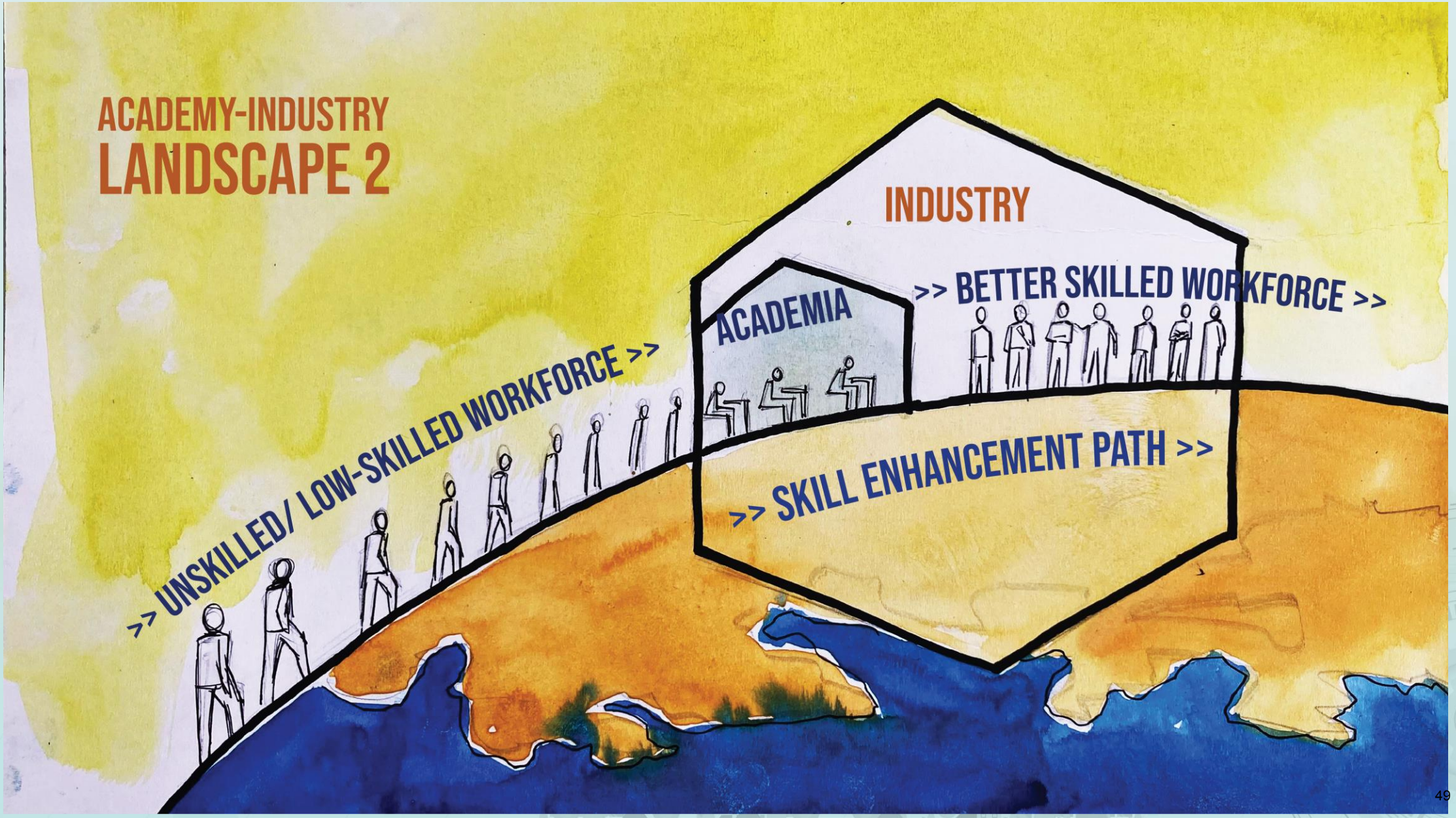


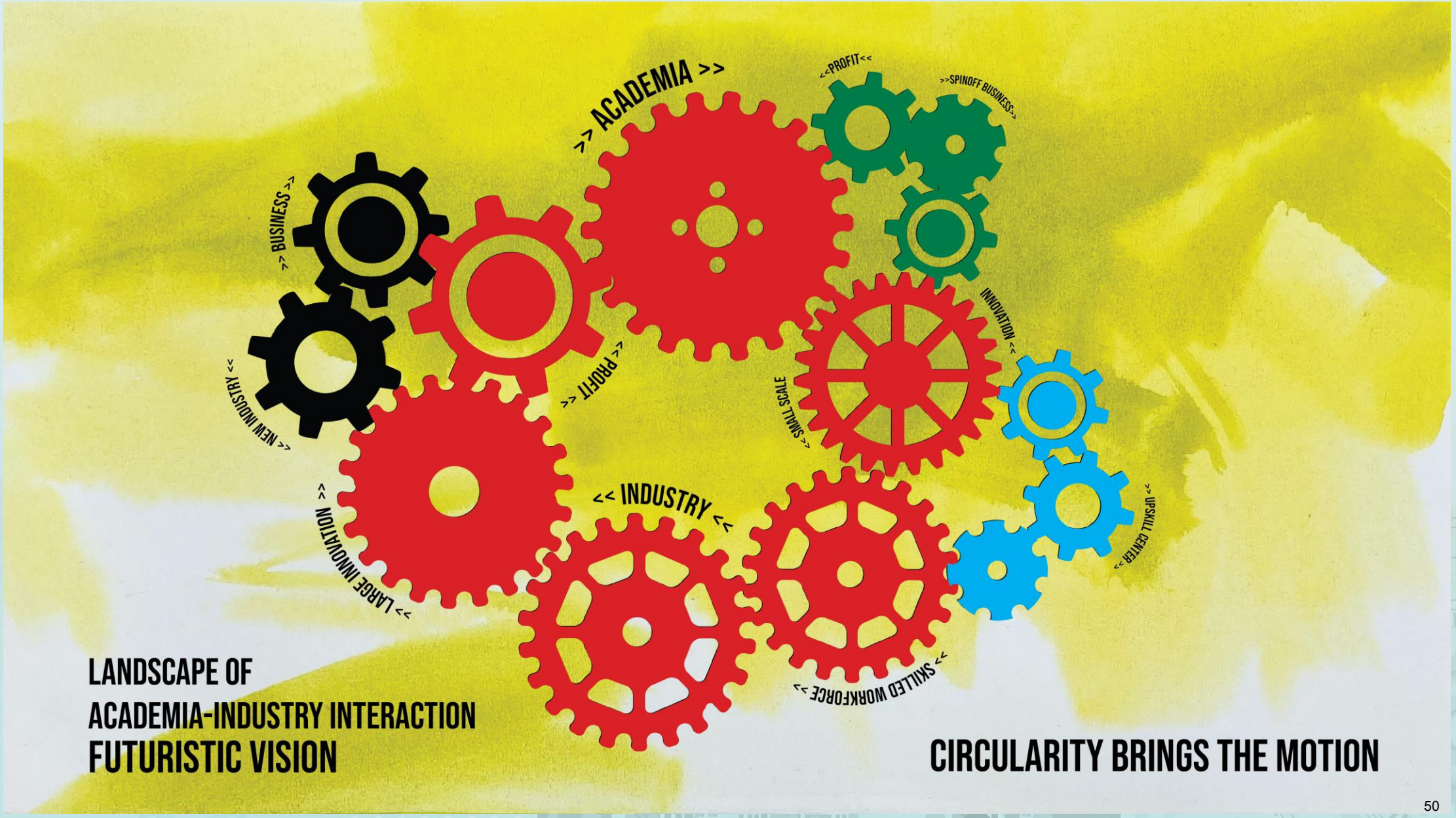
Mann, C. R. (1918). A study of engineering education: prepared for the Joint committee on engineering education of the national engineering societies (No. 11). Merrymount Press.

A MORE PRACTICAL APPROACH

- Start from the scratch and make the product
- Take the product from the industry, understand the industry needs, improve the product through innovation
- Start to innovate
- Only possible when industry is with the academia


ACADEMIA
> IMPORT OF SKILLED WORKFORCE >
LOW SKILLED INDUSTRY
HIGH SKILLED INDUSTRY
INDUSTRY
BUSINESS
> EARLY BRAIN LOSS >
PROFIT
LOSS
ACADEMY-INDUSTRY
LANDSCAPE 1


ACADEMY-INDUSTRY
LANDSCAPE 2
INDUSTRY
ACADEMIA
>> UNSKILLED/ LOW-SKILLED WORKFORCE >>
>> BETTER SKILLED WORKFORCE >>
>> SKILL ENHANCEMENT PATH >>


>> ACADEMIA >>
<<PROFIT<<
>>SPINOFF BUSINESS>>
>> BUSINESS >>
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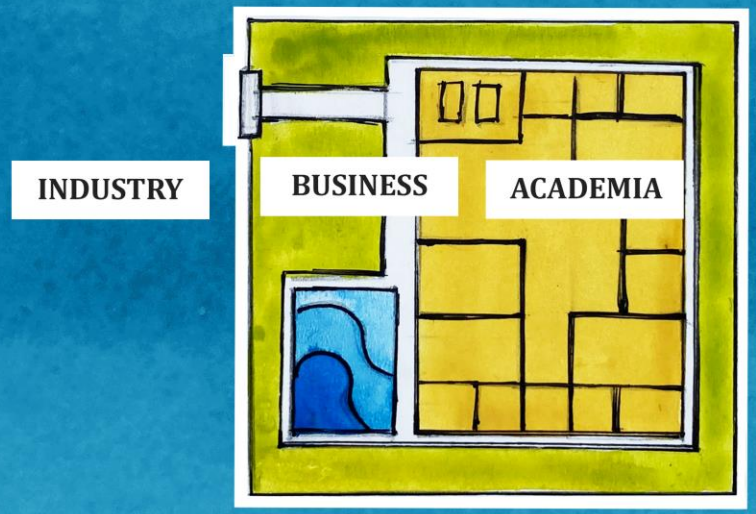
<< NEW INDUSTRY >>
>> SMALL SCALE
>> LARGE INNOVATION <<
<< INDUSTRY >>
>> UPSKILL CENTER <<
>> SKILLED WORKFORCE <<
LANDSCAPE OF
ACADEMIA-INDUSTRY INTERACTION
FUTURISTIC VISION
CIRCULARITY BRINGS THE MOTION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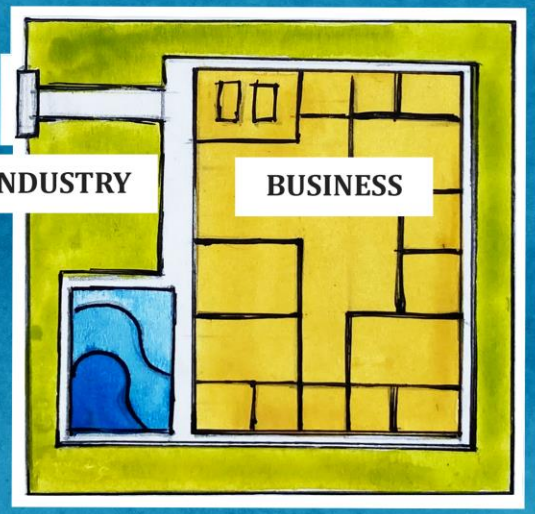
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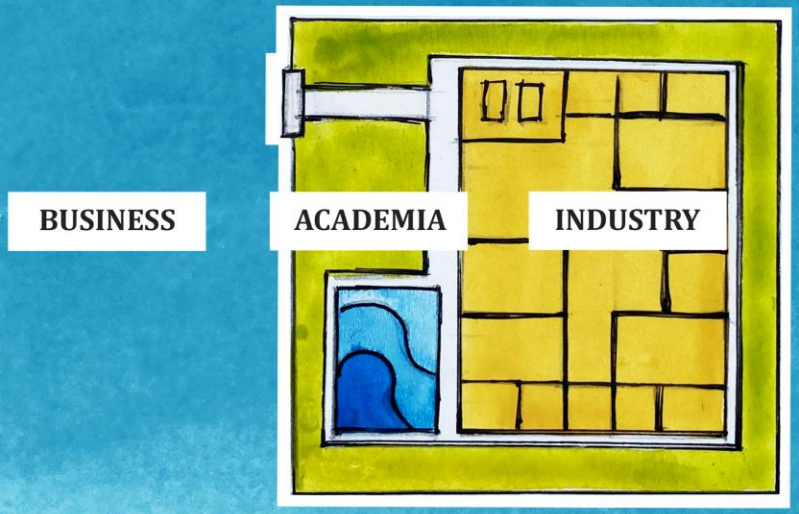
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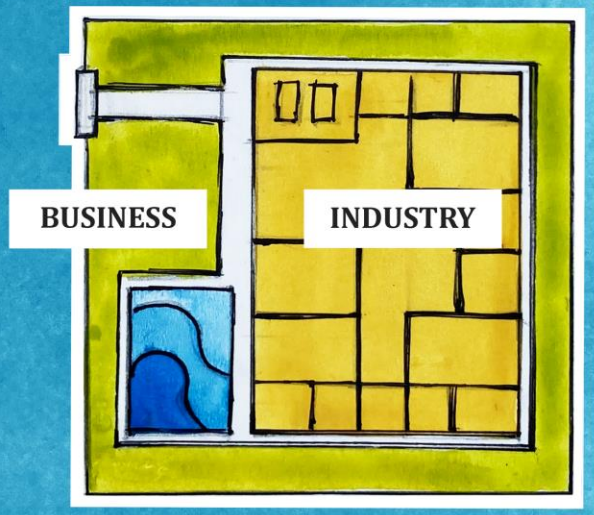
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MAJOR SHIFTS IN ENGINEERING EDUCATION – PAST 100 YEARS

A shift from hands-on and practical emphasis to engineering science and analytical emphasis;

A shift to outcomes-based education and accreditation;

A shift to emphasizing engineering design;

A shift to applying education, learning, and social-behavioral sciences research;

A shift to integrating information, computational, and communications technology in education.

GRADUATE ATTRIBUTES AND PROFESSIONAL COMPETENCIES

- The ability to solve "complex engineering problems" is at the heart of the Washington Accord
  - Multi-disciplinary professional knowledge for applications
  - More diverse technical methods and analytical research methods
  - Non-technical factors, including professional teamwork, legal awareness, engineering ethics, management, economic decision-making, and sustainable development concepts are included

SHIFTS IN UNDERSTANDING

- Intelligence
  - Artificial intelligence, machine learning, neural networks, data, and similar concepts
- Ethical Considerations, biases, trust, social implications
  - Computer Curriculum
- Heterogenious Data Handling
  - Huge amount of heterogeneous data is to be integrated for system of systems-level interoperability
- The sustainability – social, environmental, and economic
  - To help to achieve the SDG

INFLUENCING FACTORS FOR FUTURE OF ENGINEERING EDUCATION AND RESEARCH

- Automation
- Connectivity
- Data
- Data ethics
- Electrification
- Higher Education Environment
- (Artificial) Intelligence
- Labor market
- Sustainable development goals (SDG)
- Technological development
- Trust in technology
- Lifelong learning

TRADITIONAL THOUGHTS VS REQUIRED UNDERSTANDINGS

Traditional

- Our graduates might need to be equipped with this topic; so, let us include a compulsory or elective course into the curriculum.

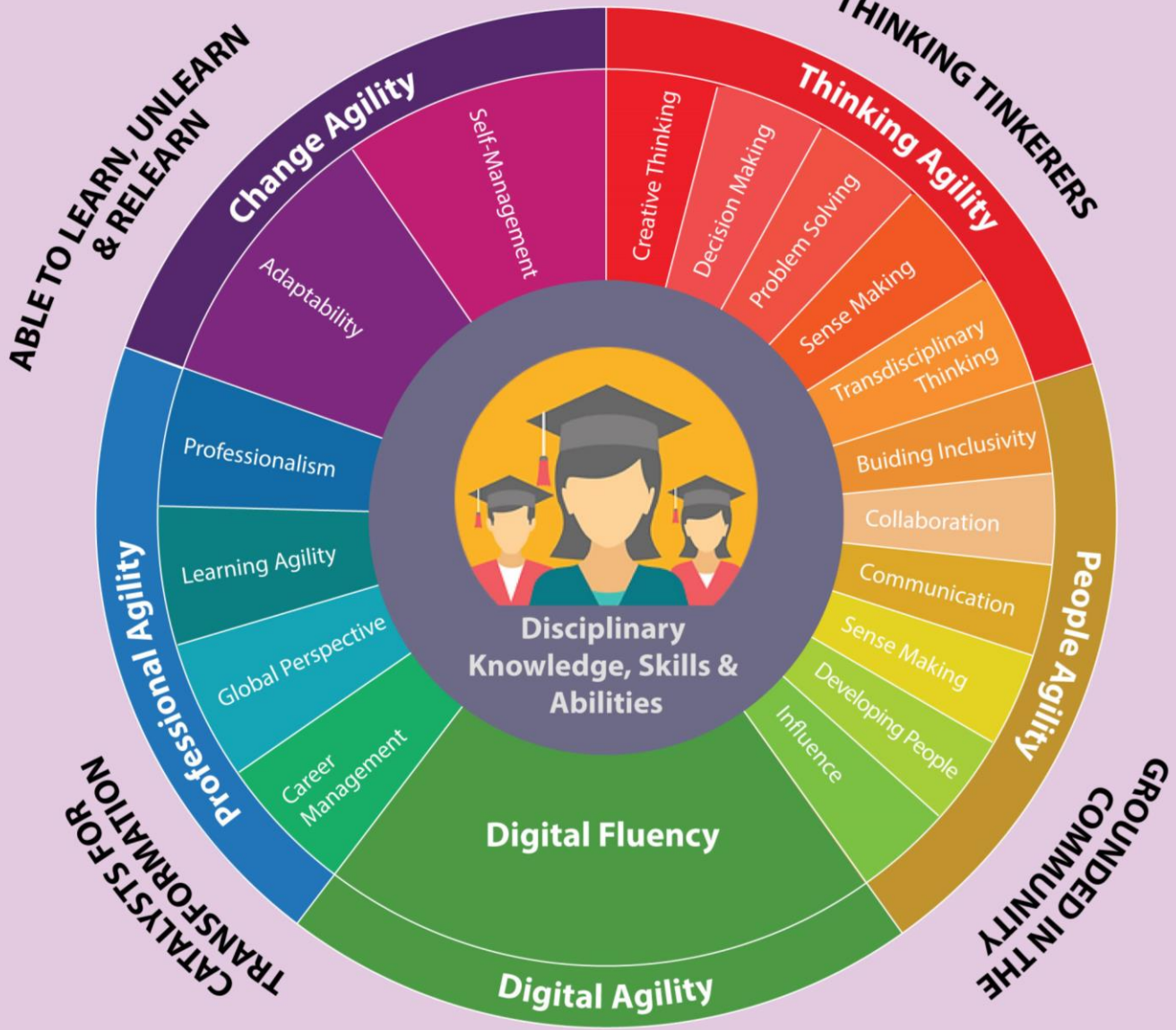
Required

- It is impossible to include all that is "new" into the curriculum.
- The paradigm shifts from "just-in-case teaching" to "just-in-time learning."
- The concepts like "life-long- learning," "learning by doing," "teach to learn" are the common talks.

আমি কিছুই তোমাদের শিখাব না, শুধু কি করে শিখতে হয় সেটা শিখাব

STRATEGIES TO CREATE ABILITIES

- Lifelong learning and transdisciplinary education
- Sustainability, resilience, and human-centric design modules
- Hands-on data fluency and management courses
- Human-agent/machine/robot/computer interaction experiences



INDUSTRIAL LAYOUT OF LINKAGES

Cultivation Model Closely Integrated with Industry

From laboratories to courses, from courses to competitions, throughout every aspect of practical teaching

COMPETITION

- Platforms have to exist Innovative practice Industrial development injects vitality into academic research Cultivate new industry stars

ENGINEERING PRACTICE ABILITY - FROM PROJECT BASED TEACHING

Through the "three-level" project-based teaching reform, cultivate students' ability to solve practical engineering problems and improve their overall quality

Based on a certain professional course, combined with actual corporate cases and projects, highlighting the combination of theory and practice, and emphasizing the flexible application of students' knowledge and the cultivation of innovative abilities

EXPECTED OUTCOMES

- Engineers from all disciplines will be the prime movers
- Our graduates shall their knowledge and skills through lifelong learning while the educators prepare our future graduates with up-to-date knowledge
- The academic arena and the industry floors need to be under the same roof for the acquisition and delivery of knowledge and skills and their enhancement
- A transformation in the teaching and learning process is on the horizon
- Engineering graduates will display their learning in the industry at home and abroad consistently over time
- The local availability of capable engineers is an attractive ingredient for foreign direct investments
- The international job markets will see our graduates as active contributors to the causes of the world

EXPECTED OUTCOMES

- The country can expect to see them as high-income wage earners to enrich our foreign-currency reserves
- Vision 2041 can be realized

SHORT BIO OF PROF. DR SAIFUL AMIN

Saiful Amin first conducted accreditation visits of BAETE about two decades ago under an input-based system. He is a leading proponent and promoter of engineering education and the development of sustainable infrastructure in Bangladesh. Prof. Saiful Amin worked for BAETE in
through subsequent revisions with his close supervision in subsequent years. He was the member
challenges of the COVID-19 era, introducing digitization and hybrid modes of communication in the processes of the board at the very onset of COVID-19, which eased day-to-day activities and maintained nationwide operations and international activities for capacity building.

Born and raised in Bangladesh in a research, education and engineering-centered middle-class family, he was awarded with a Government of Japan fellowship and several German fellowships/grants for
his doctoral and post-doctoral studies, respectively. As an experienced civil engineer and leading engineering researcher, he has been teaching and researching as well as designing, constructing, repairing, and maintaining major installations for over 25 years as an advisor and consultant in Bangladesh. Apart from his professorship in Department of Civil Engineering of BUET, currently, he holds the Director position at the Institute for Disaster Prevention and Urban Safety of BUET, focused on research of disaster management and disaster risk reduction to create a more skilled workforce. He is the chair of the Bangladesh Group of International Association for Bridge and Structural Engineering (IABSE) and also the founding member of the IABSE Academy responsible for e-learning initiatives in bridge and structural engineering. He is the Institution of Civil Engineers United Kingdom representative in Bangladesh.

Prof. Saiful Amin was honored with a gold medal from Prime Minister Sheikh Hasina in 1996 and is an F. R. Khan scholar, recipient of several merit scholarships in Bangladesh and several distinctions from Europe, Asia and the Far East.

Prof. Amin is a fellow of The Institution of Engineers, Bangladesh; Institution of Civil Engineers, United Kingdom and International Association for Bridge and Structural Engineering.

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