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UK VIETNAM HIGHER EDUCATION PARTNERSHIP (UK-VN HEP)

CAPACITY DEVELOPMENT AND BEST PRACTICES SHARING FOR UNIVERSITY INDUSTRY LINKAGES WITHIN ENGINEERING AND CONSTRUCTION SECTOR

BRITISH COUNCIL | 25 YEARS IN VIETNAM

Activities

2016 – Meekong Delta SP

May, 2017

Oct, 2018

Feb, 2019

March, 2019 (Global Infrastructure Programme)

Dean Visit (April, 2019)

HUMG Seminar

Ministry of Construction

CTU Seminar

TVU Seminar

MTU Seminar

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Guiding Questions UI Theme

Question 1	Question 2	Question 3
UI Influencing Factors What are existing barriers to develop effective UI links? How to develop a sustainable network of UI partnerships in VN and the UK to address relevant national/global issues?	**HEI Partnerships** How to strengthen UK-VNM HEI engagement leading to long-term sustainable links?	**R&D Collaboration** How to enhance R&D collaboration between Govt and Local Industry in addressing Global Challenges?

Guiding Questions UI Theme

Question 4	Question 5	Question 6
Student Mobility How to create opportunities for UK/VNM student mobility and exchanges locally (e.g. apprenticeships; workplace experience) and internationally (e.g. skills development)?	**Policy Dialogue** How to develop a policy dialogue platform to support U-I-G collaboration agenda?	**Partnership Model Review** What are most effective UI & UIG partnership models to enhance employability and sustainable development?

Guiding Questions Mobility Theme

Question 7	Question 8	Question 9
Increasing Exchanges	**Contributing to Vietnam Internationalisation Agenda**	**Mobility Models Review**
How to promote two way exchanges including SMEs/Industry?	What role UK R&I capacity can play in achieving the agenda?	What are best practice models for creating innovative partnerships in Research and Innovation?

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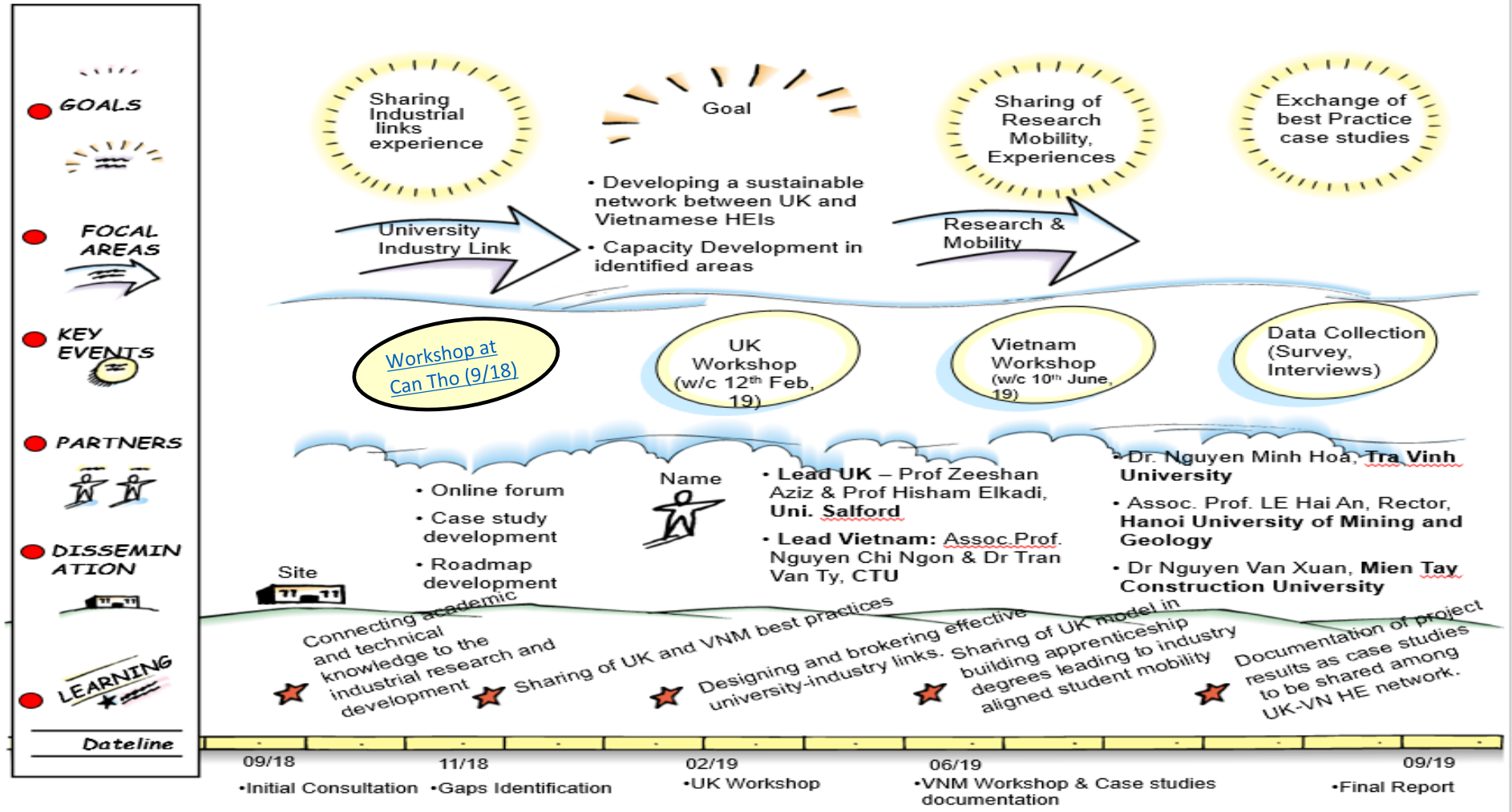
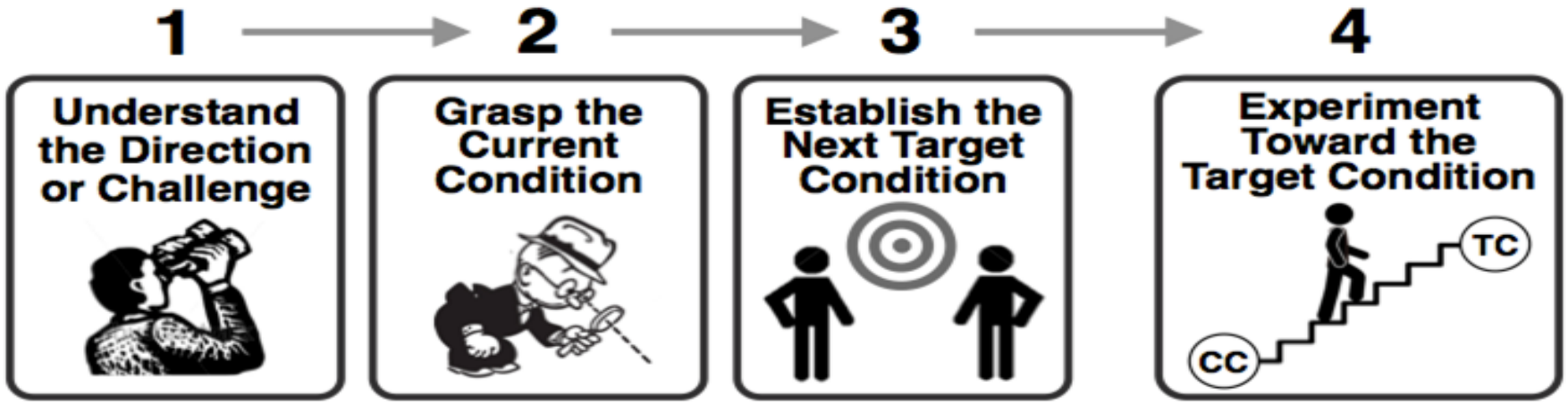
UK VIETNAM HIGHER EDUCATION PARTNERSHIP

Capacity Development and best practices sharing between involved UK and Vietnamese institutions in the areas of developing industry university linkages and researcher mobility



Approach



- Extensive literature review
- Documentation of best practice case studies
- Policy Review
- Workshops

- Expert Interviews
- Focus Groups
- What motivates the University?
  What motivates the Industry?
  What motivates the Individuals?

- Action Plan and Road map Development
- Development of a Network

- Case Studies
- Policy Recommendations
- Providing support for establishing University Industry forums

Rapidly Changing Engineering & Construction Sector

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Digital Transformation Readiness

Facing a future of complexity, global competition and uncertainty resulting from changing societal expectations, climate change, resource availability and the disruptive innovation

Industry 4.0 Transition

Intelligent Systems, VR , Automation, IoT, AVs and Robots replacing manual analog processes and labour.

Green Transition

Transitioning from biggest raw materials consumer to an Eco-Friendly construction and sustainable materials in response to climate change & GHG challenges

Fragmented to Factory Production

Prefabrication and Modularisation; Collaborative Engineering

Meeting Requirements for Industry 4.0 Society

Adaptable buildings, Brownfield Developments, Changing usage of residential and commercial spaces leading to societal well being, Smart City Transition, New Business Models

Transitioning to Industry 4.0 – Challenges for Universities

Understand Changing Expectations

- From role based to T-Shaped professionals, having both depth and breadth of knowledge
- Teaching and research collaboration between universities, research centres and companies.
- Agile and adaptive learning linked to rapidly changing industry landscape
- Leadership role (e.g. Level 2 BIM) and ensuring competency development across industry and academia
- Transitioning from career for life to life-long learning

Up Skilling Construction & Engineering Workforce

- Definition of competencies to be cascaded down through courses
- Linking accreditation requirements with desired competencies
- Operating in a dynamic environment – Mapping offerings to industry requirements
- Life long and micro learning opportunities
- New skill sets (AI, Robotics, Algorithms, BIM, 3D Printing, IoT, AVs)

Collaborative Working Skills

- Breaking away from the traditional ways of working
- Addressing cultural and interpersonal issues of collaborative working enabled by digital technologies

Curricula update

- Moving away from Siloed nature of construction curricula to cross disciplinary basis
- Promoting construction as a career of choice
- Developing capabilities required by future professionals

Key Components of Strong UI Relationship

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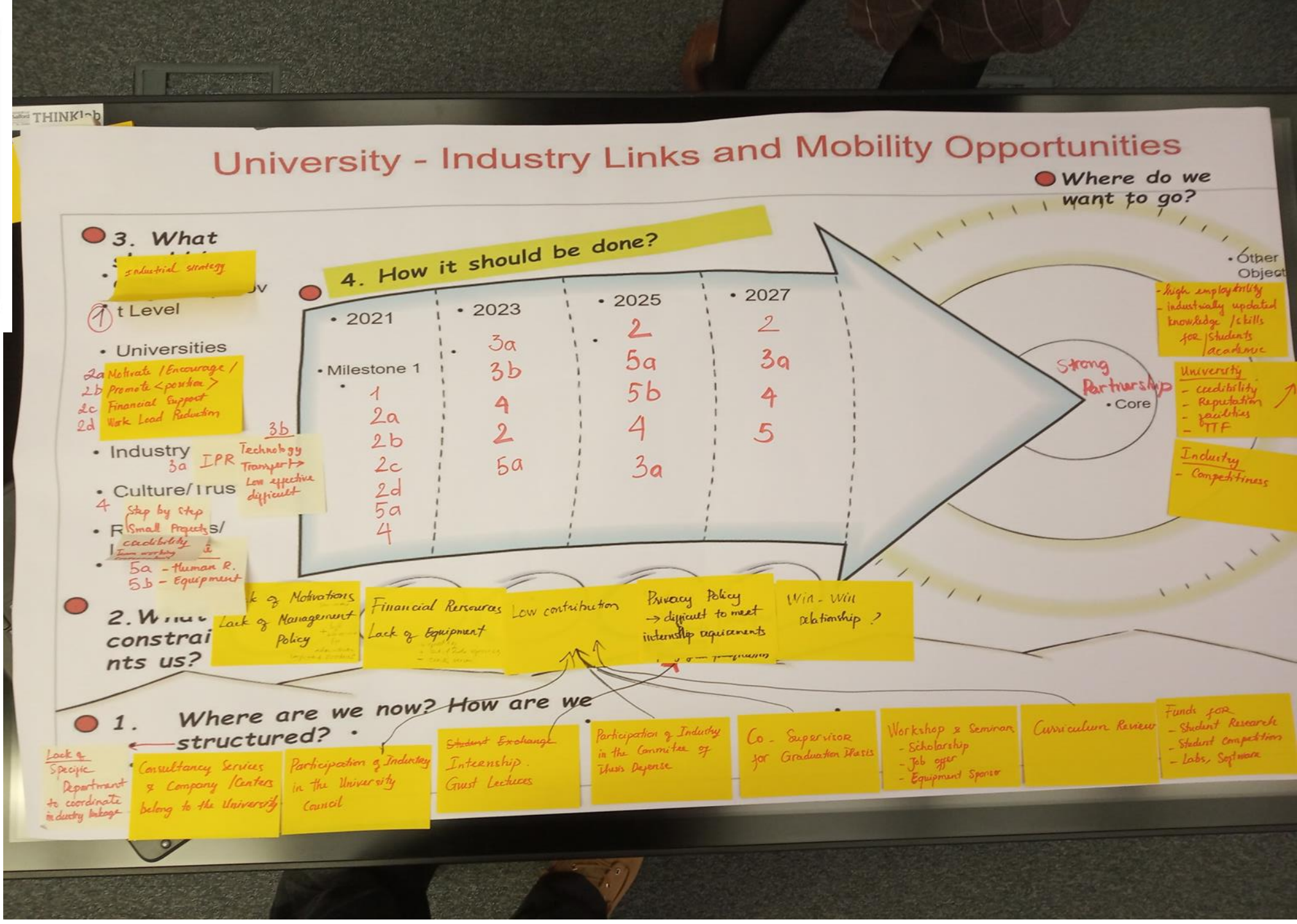
- Strong and trusting personal relationships
- Shared vision, goals and objectives defined, setting in place clear expectations
- Mutual understanding between partners
- Opportunities for staff to work across institutional boundaries
- Collaborations that bring about mutual benefits
- Availability of funding
- Clear processes for contract agreements
- Clear and effective communication between partners
- Organisational support, including senior management involvement
- Willingness to devote time and resources from both parties

Grasp the Current Condition



Industrial strategy

t Level

- Universities

2a Motivate / Encourage / Promote <position>
2b Financial Support
2c Work Load Reduction
2d

- Industry

3a IPR

3b Technology Transfer → Low effective difficult

- Culture/Trust

4 Step by Step Small Projects credibility Team working

- R…s/ L…

5a - Human R.
5b - Equipment

4. How it should be done?

• 2021	• 2023	• 2025	• 20
• Milestone 1	3a	2	
• 1	3b	5a	
2a	4	5b	
2b	2	4	
2c	5a	3a	
2d			
5a			
4			

2. W… constrai… nts us?

Lack of Motivations (Low income)
Lack of Management Policy (+ high management Fee, + take advantage, complicated procedures)

Financial Resources
Lack of Equipment (+ quality, + out of date equipment, + crack version)

Low contribution

Privacy Policy → difficult to meet internship requirements

1. Where are we now? How are we structured?

Lack of Specific Department to coordinate industry linkage

Consultancy Services & Company / Centers belong to the University

Participation of Industry in the University Council

~~Student Exchange~~ Internship. Guest Lectures

Participation of Industry in the Committee of Thesis Defense

Co… for


University - Indus ks and Mobility Opportunities
Where do we want to go?
2021
2021
- Government policy
- Alumni network development
- Start up/incubation
2023
- Capacity building
- Stagg - Employer exchange
2025
- Joint R&D development
- Education based on demand
2027
- review
- Update
Other Object
1. Where

What factors motivates academics within universities to collaborate with industry?

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- Research Grants and personal recognition
- Social contribution > Ethical /societal concerns e.g. sustainability
- From UK perspective, often a key motivation is Intellectual Property and Commercialization opportunity
- Professional connections
- Consulting model Vs IPR - (Industry engage directly with faculty members rather than at institutional level)
- UK Models - Industry experts given roles within HEIs (E.g. Industry Professors on 0.3 contracts); Industry based ICZ directors
- University spin outs

What factors motivates universities to collaborate with industry?

- Graduate employability and student internship opportunities
- Facilities development
- Curriculum co-design
- University reputation
- Shared lab usage, but not highly developed
- Improving quality and relevance of research
- Curriculum alignment to industry needs
- Business incubators at early stages of business maturity- such incubators are being encouraged by Vietnamese Government
- Educating students in entrepreneurship. This will require creating a culture involving both staff and students, generating income for university.

What factors motivates industry to collaborate with universities?

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- Attracting right talent from within HEIs
- HEIs seen as source of Innovation and cutting edge R&D
- Public Relation - As part of their CSR, Industry engage with Universities
- Drawing upon expertise within academia and resources
- Academic Consultancy to support industry problems
- There are Government Policies such as corporations to spend 5% of income on research - however, often lack effectiveness
- Sharing of experiences and knowledge transfer
- Promotion of product use - Universities used as testbeds
- Software/hardware vendors providing free software focused on PR/marketing
- National fund for Improved Technology - providing 70% of total budget - requiring University collaboration.
- Customised training programmes focused on skills requirement of a specific company. -coop programmes
- UK> Access to international markets, academic networks

What are key barriers to develop effective UI Links?

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- Lack of trust
- University facilities don’t meet industry needs
- Businesses - not strongly based on R&D foundations.
- Lack of innovation culture - “Why invest in R&D when you can buy technology at low price”
- Clash of interests - Staff have their own consultancy companies
- Time and Energy required to build links


Establish the
Next Target
Condition

Challenge 1: Only a small number of academics and SMEs collaborate

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R Regulatory/ Regional/N ational Govt	• Encourage staff to have multiple position in industry and University. Policy must encourage cross working between UI ; • Tax incentives to Industry for University engagement ; • Developing Knowledge Transfer Programmes to support UI knowledge exchange • Simplify regulations and provide incentives (e.g. innovation vouchers) to allow SMEs to access HEI R&D facilities
I Industry	• Encourage industry groups for training inside the University - Upskilling of industry staff in a specific discipline within HEIs • Academic focus teaching - industry focus delivery. Require problem solving approach • Develop subject specific UI consortiums to allow knowledge exchange and skills development • Large R&D focused businesses to play mentoring role, given SMEs have limited resources
U Universities	• Develop industry relationship policy for staff and faculty ; Develop appropriate workload models; Capacity building of University to meet requirements of the industry ; Dedicate organisation to facilitate UI Linkage - specific department of building industry relations and alumni engagement; PDR Annual Review could have Industry Engagement element (e.g. Revenue generated);
F Policy (Regulation s, Funding)	• Industry staff lack academic qualifications. Need for new recruitment pathways; University wide strategy
O Overseas Partners	• Network levels, working with existing and developing new networks, using networks to foster international collaboration; • Help develop specialisation and distinctiveness; • Sharing experiences • Creating Mobility Oppertunities

Challenge 2: Lack of understanding of benefits and trust for building effective UI links

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R Regulatory/ Regional/N ational Govt	• Encouraging companies to spend part of profit on R&D (5%) • Providing stable funding streams to drive UI collaboration • Encourage development of programmes to develop knowledge and skills for effective UI engagement for both HEIs and businesses • Develop Industry Spefici Industry Strategies
I Industry	• Industry days/Open days; University industry boards comprise industry representation and provide advice on curriculum design ; Student competitions • Developing better cross cultural (UI) understanding • Alumni serving as champions
U Universities	• Strengthen work of alumni. Alumni is key to develop common understanding. • Invite industry to do seminars, lectures; • Students contributing to industry research that requires strengthening - To develop trust, start with small projects. Pro rota and Honorary appointments; Council/Board of Governors serving as ambassadors for University;
F Policy (Regulation s, Funding)	• Link University ranking to strategic depth of their industry engagement • Developing strategic links between UI; National funding mechanisms; • National funding gets prioritised when funded by industry e.g. KTPs, ICase
O Overseas Partners	• Creation of Mobility Opportunities to allow for cross cultural learning • Providing access to global market

Challenge 3: Addressing Admin challenges (bureaucracy, work load, contract, IPs, Lack of management and governance structures) for building effective UI Links?

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R Regulatory/ Regional/National Govt	• Regional prizes for most effective UI links and publishing case studies • Encouragements to drive positive UI engagement behaviors (e.g. profile building, success case studies)
I Industry	• Promoting culture of innovation; Incubation center • Industry should send their employees to university- • Co-locating; Often initiative starts from University; Industry prefers working on their equipment
U Universities	• University should reduce overhead costs of the contract; Better staff incentivisation; • As-needed/adhoc approaches short term; Often approaches not suitable for long term contracts; • Provide workload incentives for industry related work; Better align University strategy with factors that motivate staff
F Policy (Regulations, Funding)	• Specific policies for different models of external engagement (e.g. R&D collaboration, Entrepreneurship, Skills Development, etc)
O Overseas Partners	• Perception of what they want out of their relationship. Often lack of appreciation what Universities have to offer. • Sharing experiences such as Catapults

Challenge 4: Inability to move beyond research project focused collaboration to long-term strategic relationship supported by stable resources

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R Regulatory/ Regional/National Govt	Regional collaboration - Korean R&D corporate budgets are large, good linkages with industry. Korean investment to support start-ups. Need support from the top; Focus on developing strategy relationship
I Industry	VNM - VIN Group has its own research foundation; Developing a win-win relationship ;
U Universities	Colocated campuses - Incubators for Industry and Students (space and facilities);
P Policy (Regulations, Funding)	SMEs lack continuity because of lack of long term available resources.
O Overseas Partners	• Developing strategic links with global centres of excellence

Challenge 5: Curriculum not aligned to industry needs

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R Regulatory/ Regional/N ational Govt	• Role of professional bodies • Se
I Industry	Need apprenticeship models to address skills gap; Students equipped with common set of skills;
U Universities	Industry stakeholders validate curriculum update and adjusted accordingly; Often industry lacks system level approach; Industry readiness curriculum - regular reviews ; New curriculum development has industry collaboration requirement; Develop graduate attribute matrix (critical thinker; digital literacy) .
P Policy (Regulation s, Funding)	Committees for programme approval have industry representation
O Overseas Partners	Sharing of best practices

Challenge 7: Lack of alignment between University support structures (Technology transfer, commercialisation) with industry needs

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R Regulatory/ Regional/National Govt	• Developing a triple Helix National Innovation System
I Industry	Industry Advisory Panels regularly meet
U Universities	University Graduate Attributes leading to Learning Outcomes> Discipline specific ILOS <Influenced by Professional bodies; Industry and Students advised by Industry Advisory Panels
P Policy (Regulations, Funding)	
O Overseas Partners	Train the trainer; Pedagogical support

Mobility Model 1: Training programme for educators on modern teaching methods incorporating novel digital innovation

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Why?

- Updating teaching methods
- Changing role of teacher from instructor to facilitator of learning, enabling creativity.
- Improving proficiency of digital skills
- Creating a teaching environment of immersive learning and project-oriented teaching.
- Making teaching more effective.

What?

- Improved capacity of teachers to deliver learner-centric teaching
- Enhanced student learning outcomes through more effective engagement
- Stronger industrial linkage improving employability of graduates
- Transfer lessons from novel project-oriented and digital teaching methods from UK to Vietnam

Relevance

Enhance exposure of Vietnamese lecturers to audit UK teaching methods

Mobility Model 1: A Training programme for educators on modern teaching methods incorporating novel digital innovation

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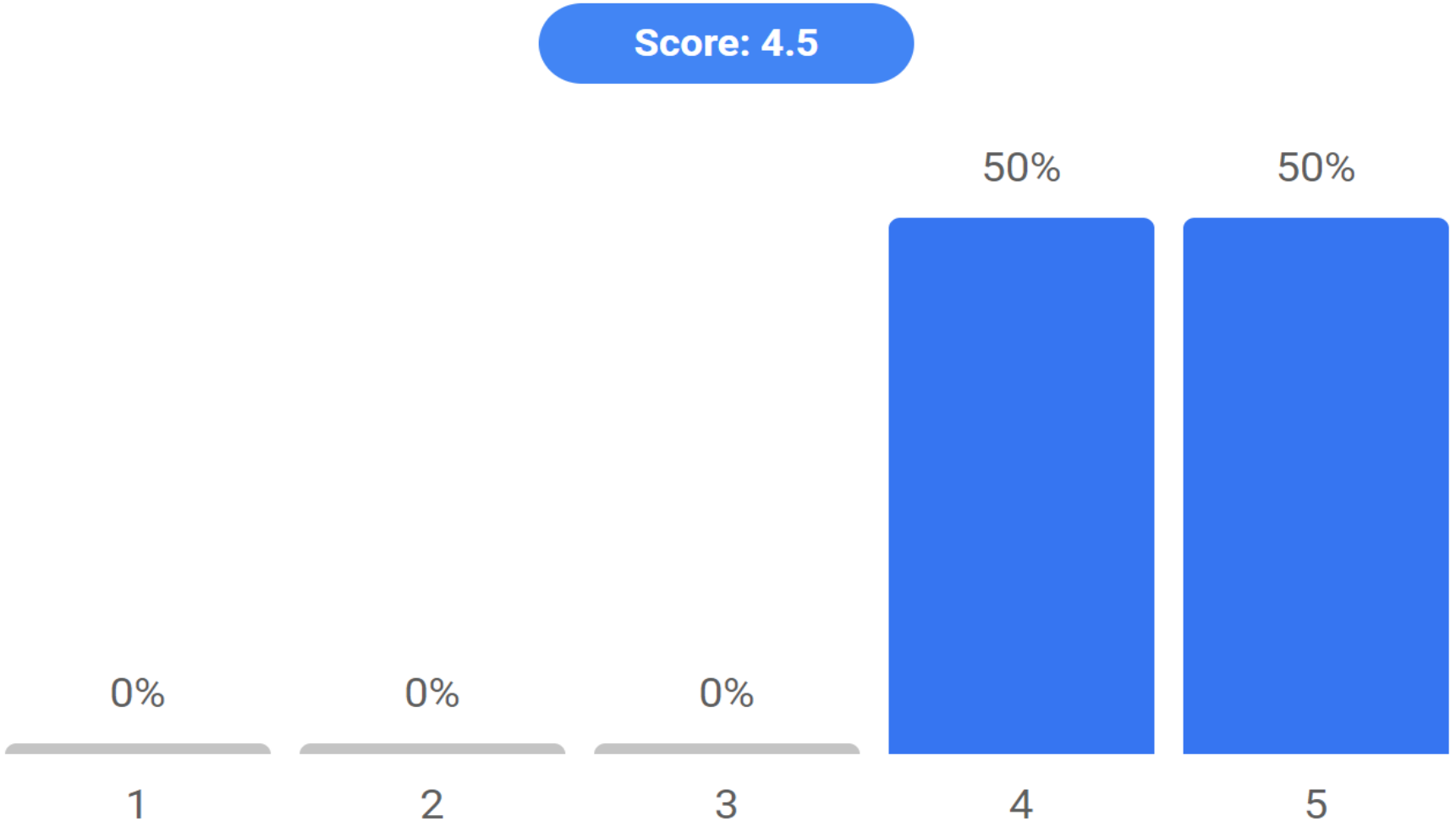

Mobility Model 2: Deliver training in research methods for industry-oriented projects

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Why?

- Awareness of research methods
- Tools to support industry-oriented research
- Training on Tools & methods to solve practical industry problems
- Capacity development for industry based research
- Research-led teaching to informe career development of staff in research
- Need to build relationships and capacity for future joint research projects and improving research outputs for Postgraduate study

What?

- Structured training in research methods from leading UK academics
- 1 or 2 week residential summer school Training in engineering/scientific research methods
- Enhancing quality of industry research within industry
- Improved connections between Vietnamese and UK researchers and staff active in research
- engagement between UK and Vietnamese faculty in advising industry research projects

Relevance & How

Necessary to enhance research capacity - will help capability to engage with industry

Mobility Model 2: Deliver training in research methods for industry-oriented projects

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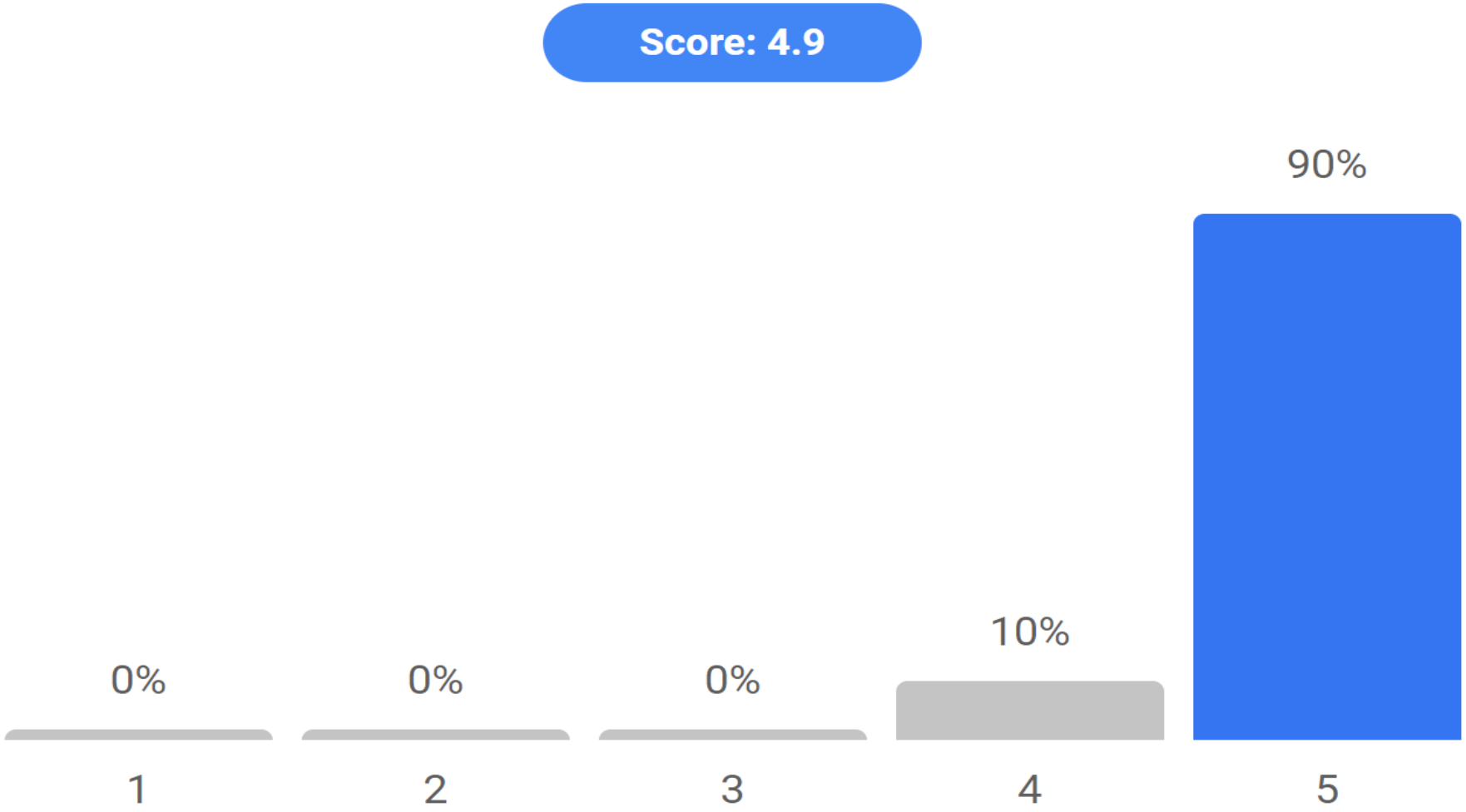

Mobility Model 3: Collaborative Curriculum development & ensuring industry readiness of the curricula

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Why?

- Need to update curricula for Industry 4.0
- Identification of key building blocks for industry readiness
- Mapping of existing curricula with industry skills matrix
- Collaborative design/ development of curricula in emerging technologies
- Curriculum enhancement related knowledge exchange visits

What?

- Development of key principles for industry readiness
- Review of existing curricula with delivery teams

Relevance

Need change adaption readiness

Focus must be on 3+ 2 programme. Exchange programmes with 3 years in Vietnam and 2 years overseas

Mobility Model 3: Collaborative Curriculum development industry readiness

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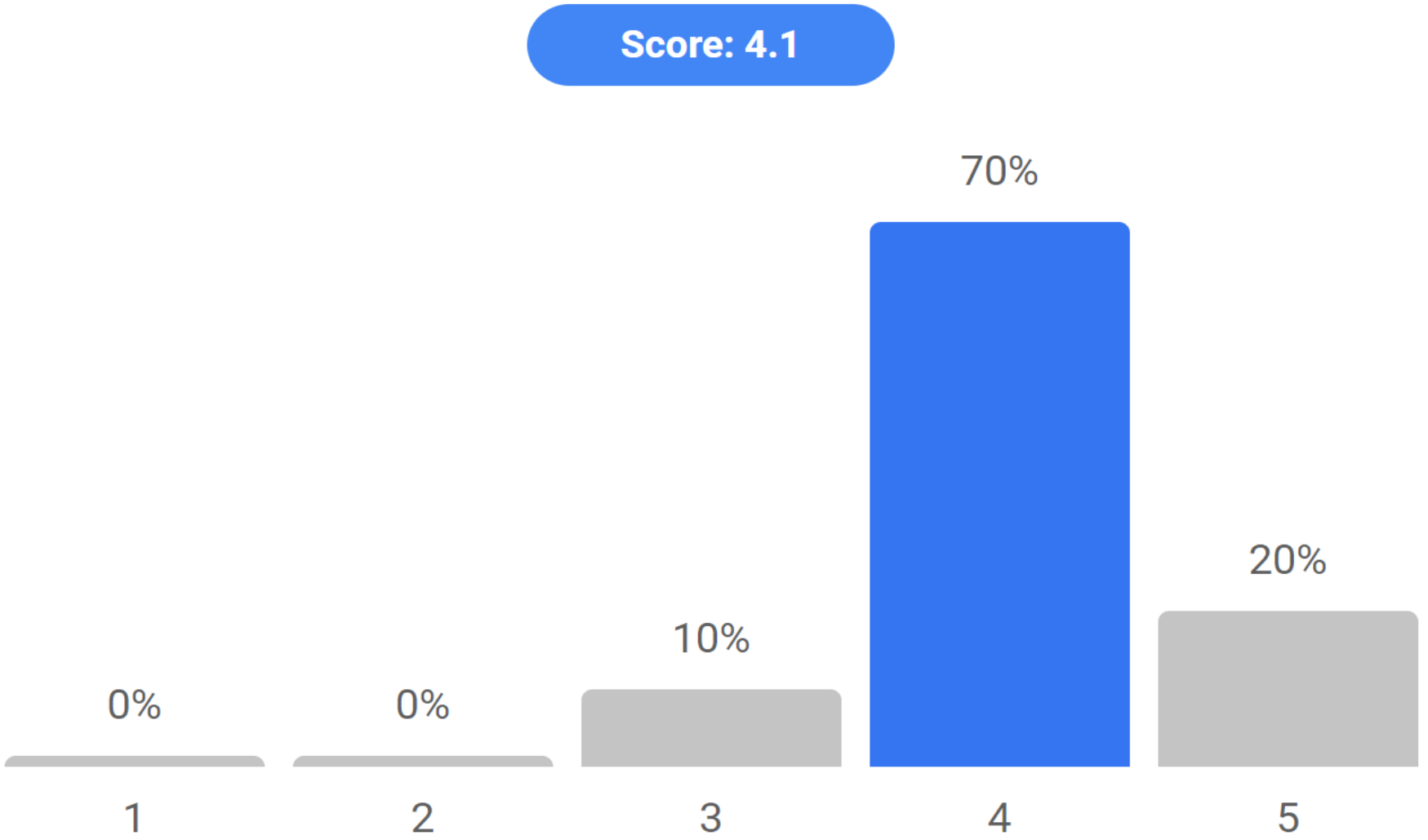

Mobility Model 4: Industry identified research problems and UK & Vietnamese academics work together to address these problems

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Why?

- Collaborative research between UK and Vietnamese academics in response to the industry needs
- Help develop research capacity within Vietnamese universities
- Help develop trust between VNM Industry and HEIs to work closely with local universities.
- Harnessing UK expertise in building research capacity
- Use of UK expertise to solve industry oriented problems

Developing contacts between specialists (HEI and Industry based) in UK and Vietnam

What?

- UK & Vietnamese academic work collectively to address industry identified needs
- UK/VNM Collaborative working to deliver collaborative response to industry identified challenges

Relevance

Develop joint research projects

Mobility Model 4: Industry determines research problems and UK & Vietnamese academics work together to address these problems

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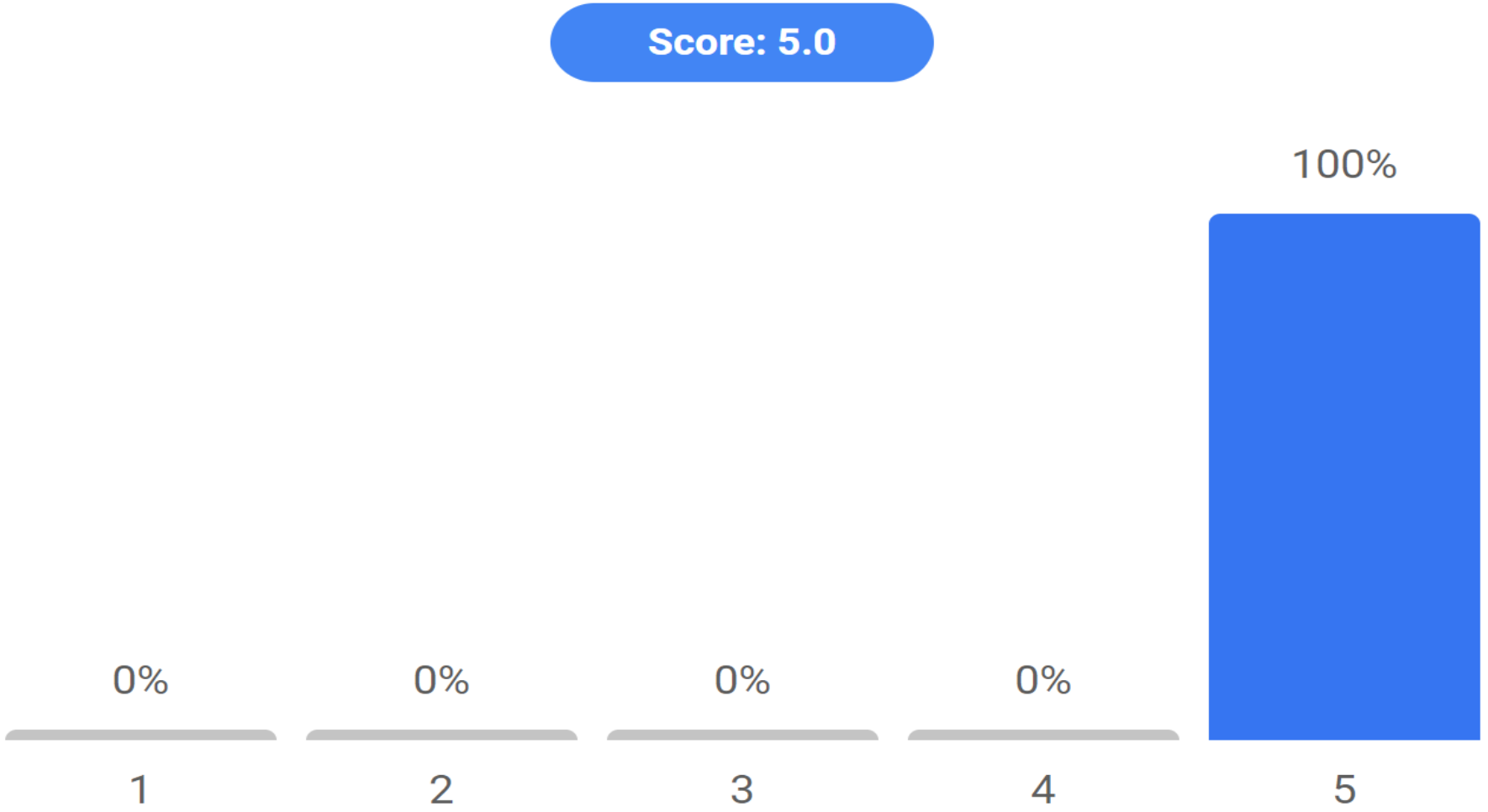

Mobility Model 5: Student competitions for solving industry-related problems

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Why?

- Industry challenge - not being able to recruit specialists
- Students have limited opportunity for internships
- Need to improve local university - industry engagement
- Engaging students in industry research in competitions
- Talent spotting
- Enhanced student employability

What?

- Students gain practical experience and application of technical skills
- Industry sponsored prizes focused on solving industry problems
- Developing problem solving skills
- Student teams could be encouraged to have cross country participation
- Links between academics and Industry

Relevance

There is already evidence of using this model. Important for strengthening innovation.

Mobility Model 5: Student competitions for solving industry-related problems Problem Statement

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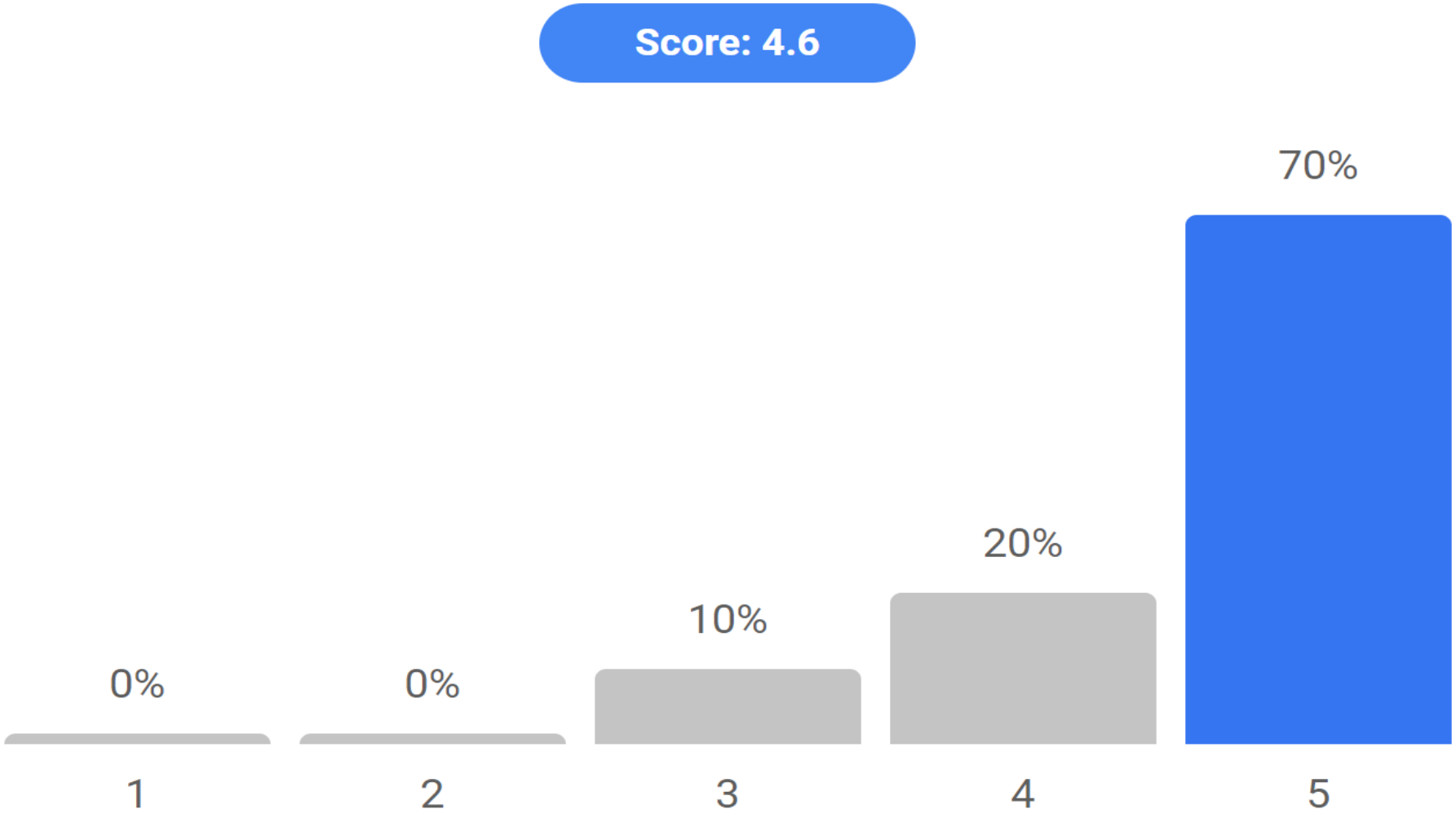

Mobility Model 6: Master Classes

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Why?

- Identification of priority sectors relevant to Vietnamese economy
- Enhancing quality of engineering
- Identification of best practices and skills gaps assessment .
- Specific skills for various industrial applications

What?

- ‚Master classes in high priority subject areas focused on engineering lecturers
- Use of specialists and teacher training models

Relevance

Mobility Model 6: Master Classes

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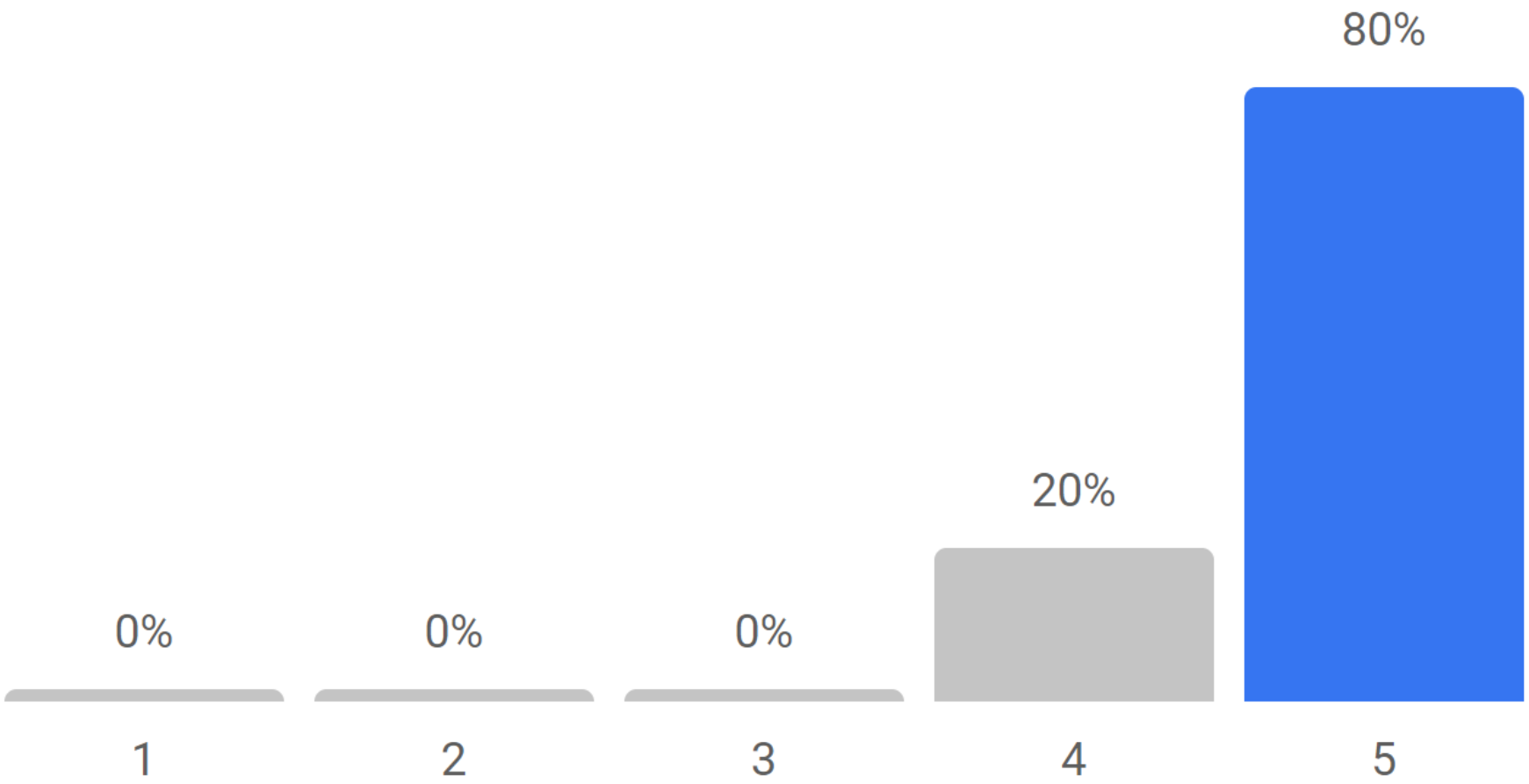
Score: 4.8



Mobility Model 7: Staff exchanges on an industry-led research programme

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Why?

- Sabbatical periods in industry lead research projects and implementation of similar programmes upon return
- Identification of priority sectors relevant to Vietnamese economy
- Enhancing quality of engineering
- Identification of best practices and skills gaps assessment .
- Specific skills for various industrial applications

What?

- Master classes in high priority subject areas focused on engineering lecturers
- Use of specialists and teacher training models

Relevance

Exchange can be of interest to industry partners to exchange skills

Mobility Model 7: Staff exchanges on an industry-led research programme

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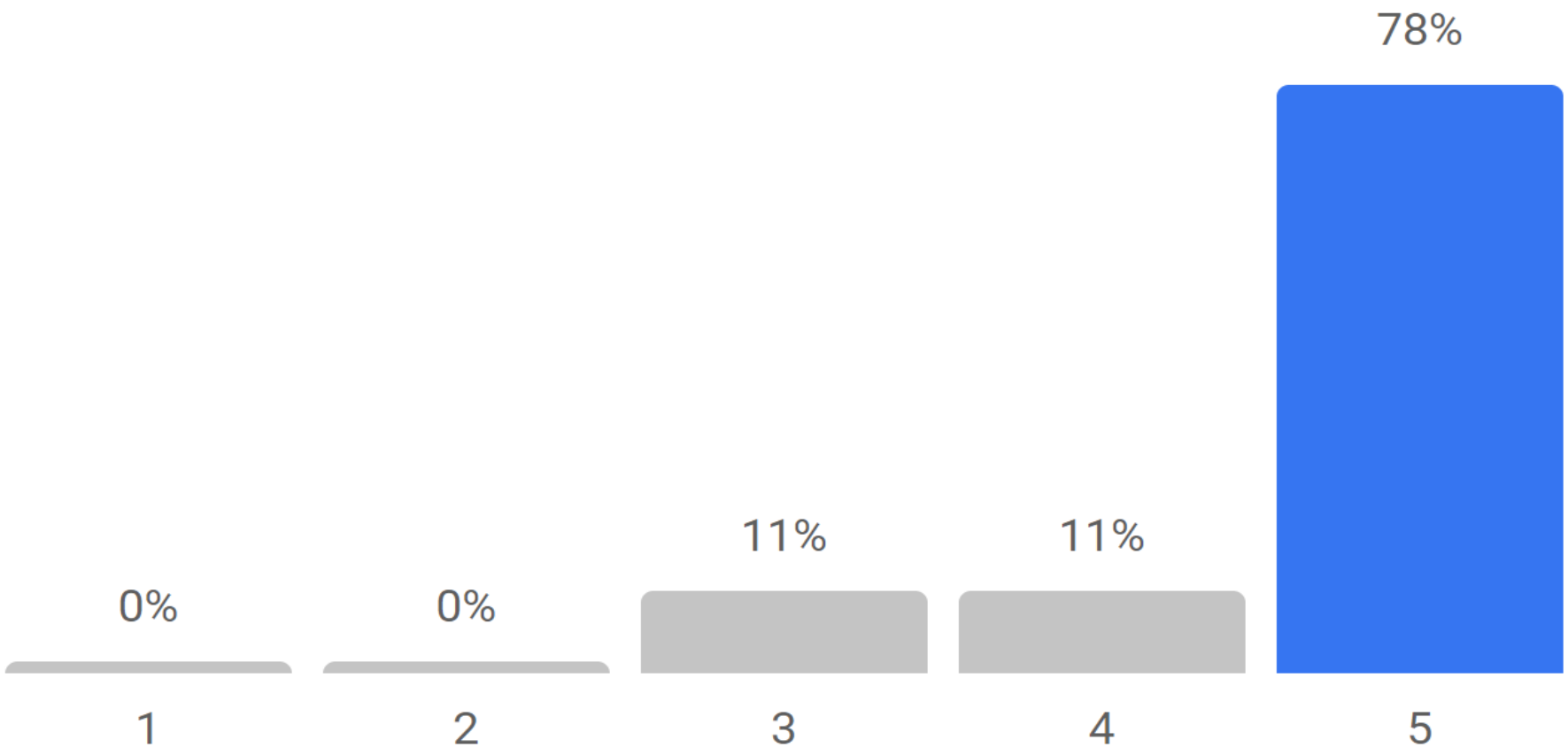
Score: 4.7



Mobility Model 8: Cross country exchange of Industry Chairs

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Why?

- Bringing senior industry people into engineering departments.

What?

- Improving linkages of universities to local and international industry

Relevance

Mobility Model 8: Cross country exchange of Industry Chairs

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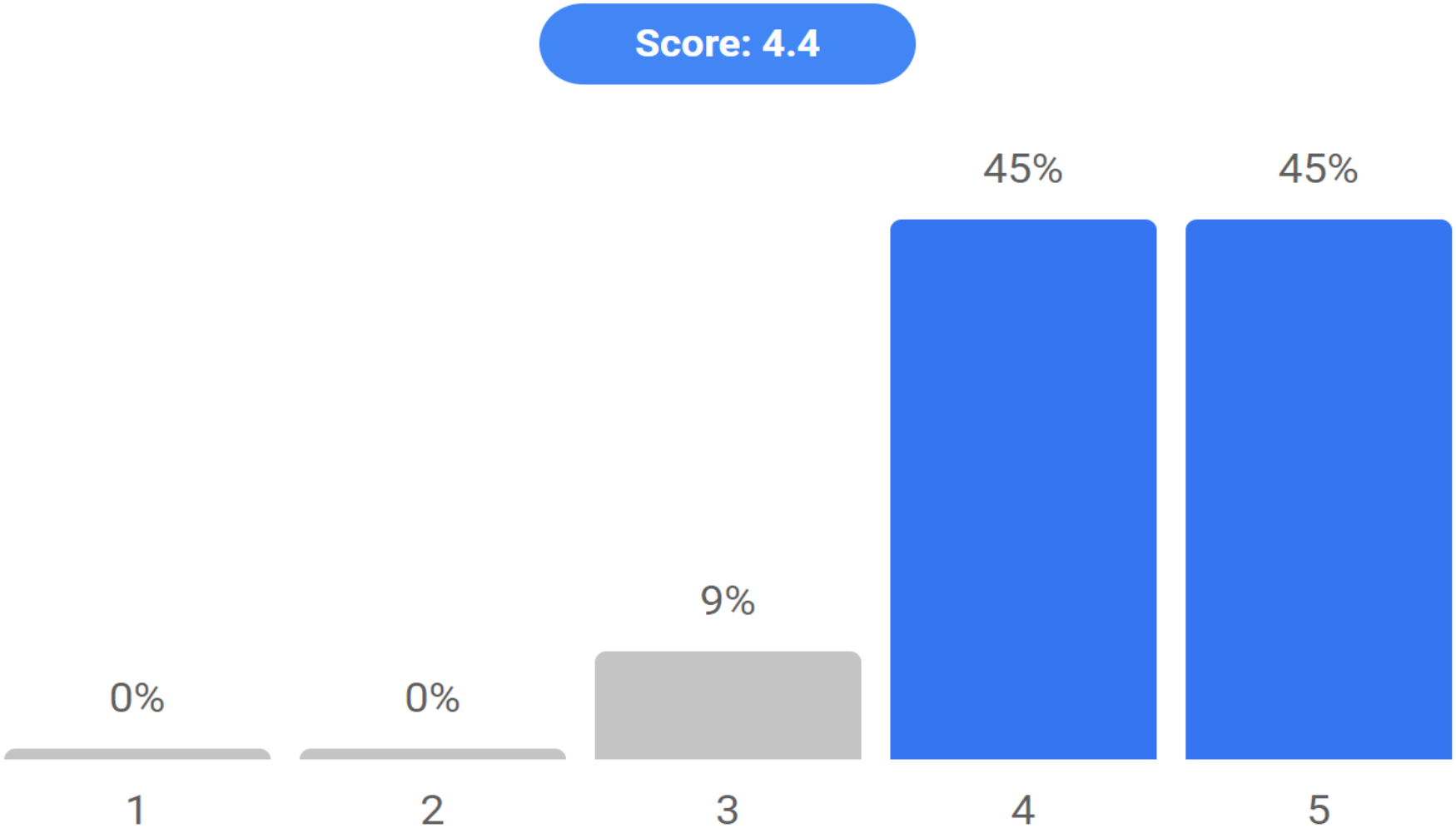

Launch of Vietnam BIM Academic Forum

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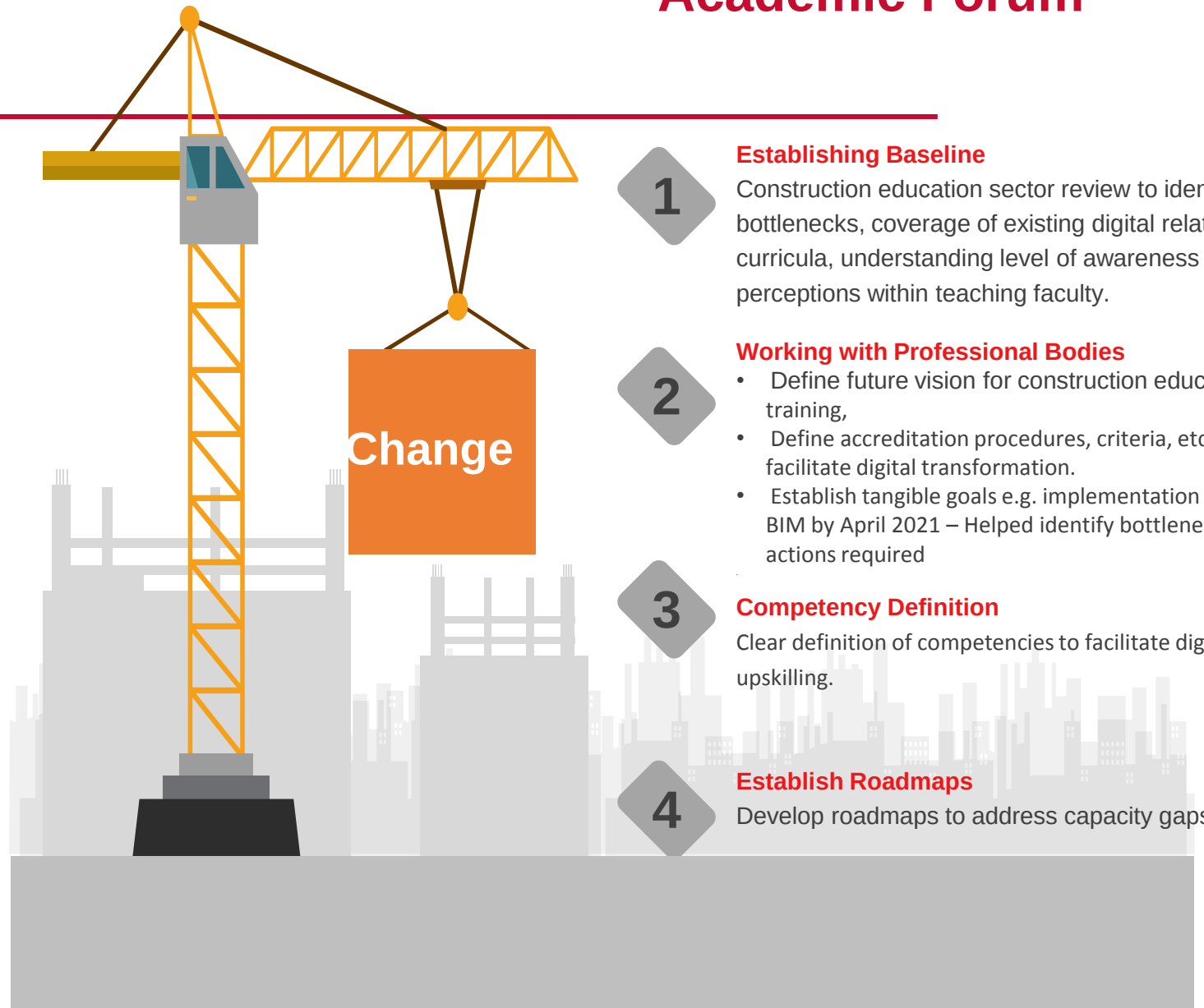

1

Establishing Baseline

Construction education sector review to identify bottlenecks, coverage of existing digital related curricula, understanding level of awareness and perceptions within teaching faculty.

2

Working with Professional Bodies

- Define future vision for construction education and training,
- Define accreditation procedures, criteria, etc. to facilitate digital transformation.
- Establish tangible goals e.g. implementation of Level 2 BIM by April 2021 – Helped identify bottlenecks and actions required

3

Competency Definition

Clear definition of competencies to facilitate digital upskilling.

4

Establish Roadmaps

Develop roadmaps to address capacity gaps.