



# HCT 4.0

## Applied Research Focal Strategy 2017 - 2021

**Abstract** This document details the extrapolation of the HCT 4.0 strategy in the context of Applied Research for HCT and it is the culmination of input gathered through several meetings, interviews and workshops from internal and external stakeholders.

THE STRATEGY & FUTURE DEPARTMENT

(For any queries or comments concerning the contents of this document)



# APPLIED RESEARCH

## Focal Strategy 2017 - 2021

### Contents

<b>1. Aims &amp; Aspirations</b> .....	<b>3</b>
<b>2. Alignment to National Strategies</b> .....	<b>4</b>
2.1. National Innovation Strategy .....	4
2.2. UAE Science, Technology and Innovation Policy .....	4
2.3. The Ministry of Education Higher Education Strategy .....	4
2.4. Dubai 50-year Charter .....	4
2.5. The National Agenda .....	4
<b>3. Overview</b> .....	<b>5</b>
2.1. Key Challenges .....	5
2.2. Future Foresight .....	5
2.2.1. Trends .....	6
<b>4. Core Focus Areas</b> .....	<b>7</b>
4.1. Creativity and Innovation .....	7
4.1.1. Interdisciplinary Approach .....	7
4.2. Industry Collaboration .....	7
4.2.1. Strategic Partnerships .....	8
4.3. Professional Development .....	8
4.4. Research Ecosystem .....	8
4.5. Research Culture .....	8
4.6. Intellectual Property .....	9
4.6.1. Intellectual Property Policy .....	9
<b>5. Strategic Objectives</b> .....	<b>10</b>
5.1. Objective Profiles .....	10
5.2. Performance Management .....	13
5.3. Projects .....	13
<b>6. Value Proposition</b> .....	<b>14</b>
6.1. Beneficiary Profiles, Requirements and Key Services Provided ...	14
<b>7. Strategic Roadmap</b> .....	<b>17</b>
7.1. Milestones .....	17
7.2. Strategic Priorities (over the next 12 months) .....	18
<b>8. Glossary</b> .....	<b>19</b>

## 1

## Aims & Aspirations

In alignment with the HCT Vision Statement - 'The Higher Colleges of Technology is the leading applied Higher Education Institution in empowering generations to contribute to the shaping of the future of the UAE.', the aims and aspirations of this Applied Research strategy are as follows:



- **Applied Research is a catalyst and leading contributor to UAE's community and economic development** through the creation of positive community impacts, production of world-class research that brings market innovative ventures and focus on the national innovation agenda
- **Make HCT a hub for collaboration with industry** to provide for innovative approaches, frameworks, and environments to develop solutions
- **Applied Research will be a catalyst to technology-based innovation** through converting technology into business incubating opportunities and graduating sustainable companies
- **Connect research activities with teaching** to enhance student experience and success



## Alignment to National Strategies

This focal strategy has been aligned to a number of UAE national strategies in the following key areas:

### 2.1. National Innovation Strategy

- Innovation Regulatory Framework: protection of Intellectual Property Rights through the establishment of efficient and effective patent registration procedures
- Enabling Services: the promotion of research and development and incentivizing innovation and entrepreneurship incubators to sponsor and assist innovators in transforming their ideas into leading projects
- Technology Infrastructure: establishment of a technology infrastructure that supports the generation, dissemination and retention of knowledge needed by innovators
- Investment and Incentives: the generation of innovative ideas and turning them into new products and services supported by new innovative funding options that meet the needs of both individuals and graduate companies
- Innovative Individuals: developing students and learners into entrepreneurs who exemplify a spirit of innovation and collaboration with global peer academic institutions in applied research
- Innovative Companies and Institutions: work with national companies in developing, promoting and commercializing their innovations with emphasis on Research & Development in the UAE using best-in-class research centers and adopting cutting-edge technologies
- Innovative Government: align with the government's innovation agenda
- Innovation Priority Sectors: Be strategic in the selection of priority sectors to collaborate in applied research and innovation with companies ensuring their alignment with those identified in the National Innovation Strategy

### 2.2. UAE Science, Technology and Innovation Policy

- Contribution towards faster economic growth to create sustainable wealth independent of natural and non-renewable resources
- Creating opportunities for the development of talent and human capital required for economic development
- Facilitating innovative solutions through Applied Research in collaboration with industry partners
- Supporting the UAE in its transition into a knowledge and innovation based economy

### 2.3. The Ministry of Education Higher Education Strategy

- Impactful Innovation Ecosystem (a strong pipeline of applied research projects and a comprehensive innovation ecosystem that drives the commercialization of ideas)

### 2.4. Dubai 50-year Charter

- Article Six: Free Economic and Creative Zones in Universities: the setup of public and private universities as free zones that allow students to carry out business and creative activities, making these activities part of the education and graduation system, and shaping integrated economic and creative zones around the universities

### 2.5. The National Agenda

- Cohesive Society And Preserved Identity: We aim to graduate students and learners that are proud of their identity and equally proud of their contribution to the UAE economy



## Overview

Universities, other Higher Education Institutions (HEIs) and industry are important drivers of innovations. Fundamental research in universities is laying the foundation for radical scientific and technological breakthroughs in fields as diverse as materials science, neuro- and biotechnologies, and artificial intelligence, among others. Industry is equally shaping this revolution by putting these breakthrough technologies to work and engaging in research and development efforts of their own. And HEIs like HCT are focused on applied research which aims to address real industry challenges. Therefore, effective cooperation between HCT, industry partners and other peer HEIs is necessary to ensure that all stakeholders: students, learners, HCT and industry bodies are prepared for this rapidly evolving World of Work.:

### 3.1. Key Challenges

To fully establish an effective applied research ecosystem here at HCT, a number of challenges will need to be overcome. Chief among these is talent. All benchmark studies indicate that a key success factor is the ability to attract, recruit and retain faculty with significant industry experience, and academic qualifications (up to PhD level) that can not only teach but are able to lead research projects. Added to this should be a marked emphasis on international faculty, for the broad range of experiences which results from that. To complement the pure academic faculty here at HCT, there are moves to recruit adjunct faculty with industry experience.

Equally important is the quality of students and learners as a key driver to success in applied research projects. On the basis that all academic and professional programs will contain elements of applied research, ensuring that students develop the necessary aptitude to undertake such research projects will be important. Also, learners (mid-career professionals) would already have industry experience that would contribute very well to an applied research focus and outputs.

Last but not least is the challenge of time to conduct research. Balancing teaching load with time to conduct research is a challenge that all relevant faculty have to overcome,

particularly as promotion is contingent on achieving this successfully. Benchmark studies reveal that the ratio of teaching to research undertaken by the typical basic research university is 40% and 60% respectively. However, for HEIs like HCT this is 89% and 11% respectively<sup>1</sup>.

### 3.2. Future Foresight

Applied research is heavily dependent on collaboration with industry and such collaborations typically evolve from ad-hoc, short-term engagements to more long-term, strategic ones. In the future, it is highly likely that such bilateral collaborations, between a company and a university/HEI, will be replaced by much more diverse interactions with multiple industry and university/HEI partners in Industrial Venture Collaborations (IVCs) within an Innovation Ecosystem<sup>2</sup>.

In IVCs, companies work with one or more universities/HEIs to provide guidance, people, labs and other resources to drive their research projects to faster commercialization. Although the Innovation Ecosystem will be regional by nature, the scope of the work in the IVCs could have a global outlook with respect to international collaboration opportunities, reputation building, performance benchmarking and strategic alliances.

<sup>1</sup> Source: The Guardian Newspaper, UK.

<sup>2</sup> Source: Strategic Industry-University Partnerships. Elsevier Science

Similarly, establishing networks with other HEIs as a means to deliver research strategy aims offers the benefits of increased critical mass and convening power (e.g. with respect to gaining global support for a particular research set of outcomes) and the ability to respond to government initiatives more effectively.

### 3.2.1. Trends

As mentioned above, current trends of ad-hoc, short-term problem solving between universities/HEIs and individual companies are rapidly moving towards more strategic collaborations which are more long-term (because they involve the development of technologies and the acquisition of dedicated talent), where applied research projects are selected on the basis of strategic alignment with university/HEI and company goals. Beyond these strategic collaborations are innovation ecosystems, many of which are already in operation globally where multiple university/HEI and industry collaborations occur dynamically to accelerate the development of and exposure to new technologies. Often these innovation ecosystems have their own dedicated Centres of Excellence with strong links back to their host universities/HEIs and companies.

With regard to strategic collaborations, HCT has already established strategic partnerships with a number of high profile industry organizations with whom we will be undertaking joint research projects. Similarly, CERT (Centre of Excellence for Applied Research and Training) is an HCT offshoot organization that is ideally placed to be part of a Regional (Abu Dhabi) Innovation Ecosystem.



## Core Focus Areas

### 4.1. Creativity and Innovation

Successful applied research relies on creativity and innovation. Creativity resulting from motivation, expertise and imaginative thinking<sup>3</sup>, and innovation - the process of translating creativity into tangible, marketable products. Creativity without innovation will only lead to the generation of ideas, none of which will see the light of day. Innovation without creativity will likely lead to a less-than-optimal version of an existing product or service.

Motivation, of students, learners and faculty is necessary for the persistence required to solve a problem and willingness to challenge accepted wisdom. Expertise, knowledge transfer and imaginative thinking is needed to conceptualize a new product paradigm or re-fashion an existing one in a different manner. A process often referred to as 'creative destruction' which could lead to the generation of hitherto unforeseen demand for a product or service.

#### 4.1.1. Interdisciplinary Approach

Although applied research is part of the faculty load in each academic division, the Interdisciplinary nature of real-world problems will often require collaboration across academic divisions to solve. The bigger the problem, the more it is likely to require an Interdisciplinary team to work on it. To this end, the idea of 'Research Themes' are under consideration at HCT as organizing principles to guide and structure inputs from different academic disciplines into problem-solving on research projects.

In addition, leveraging on formal partnership arrangements with other HEIs, e.g. through the GAEN (Global Applied Education Network), to address research problems is another means by which HCT will be supplementing the Interdisciplinary approach described above, in order to achieve applied research excellence.

### 4.2. Industry Collaboration

The changing World of Work is increasing the pressure on companies to shorten product life cycles and update knowledge and skills more frequently. Hence, innovative companies cannot anymore rely solely on their in-house resources to solve product and business problems and are increasingly looking to work together with universities and HEIs to complement their internal research teams, to stay competitive.

Universities and HEIs are hubs of innovation where new technologies are developed and fresh talents are educated. They have also become proficient at using a variety of state resources to create new circuits of knowledge that link higher education to the new economy<sup>4</sup>, e.g. through the programs that they teach, the formation of startup enterprises, or the establishment of networks that intermediate between private and public sectors. Therefore, partnerships between universities and corporations are thus a fundamental driver of economic progress and an important catalyst for finding solutions to societal problems<sup>5</sup>.

At HCT, collaboration with industry on applied research projects is mandated for research projects that have been deemed eligible for interdisciplinary grant funding. In other words, the grant funding is subject to the researcher securing endorsement from industry for the commitment of resources to the research project - i.e. financial, human or material resources. Similarly, an Industry Matching Fund was launched earlier in 2019 from which allocations can only be made towards research projects where the researcher has secured a matching amount from industry towards the project. CERT (Centre of Excellence for Applied Research and Training) is an offshoot and separate subsidiary of HCT with strong links with industry and they are an active and willing partner in facilitating links between HCT faculty and industry in the sponsorship of research projects.

<sup>1</sup> Source: Researching Higher Education, Jennifer M. Case

<sup>2</sup> Source: Academic Capitalism and the New Economy, Sheila Slaughter

<sup>3</sup> Source: Etzkowitz, Ranga, & Dzisah, (2012)

### 4.2.1. Strategic Partnerships

In the interest of long-term strategic partnerships with industry or other HEIs, there are a number of criteria that are important to the partners which HCT must take into consideration in its strategy:

- Industry partners are more likely to sponsor research projects that are in alignment with their business goals. Therefore, it is insufficient to establish relationships with industry partners but it is necessary to become intimately familiar with their strategic goals and objectives too.
- Collaboration with other HEIs (particularly foreign institutions) for applied research must take into consideration their research focus areas and priorities. This HCT applied research strategy is fully aligned with the UAE National Innovation Strategy which targets very specific strategic sectors. If the focus areas of foreign partner HEIs are not aligned with these sectors, this could jeopardize the success of the research project.
- Long-term strategic partnerships with either industry or other HEIs, require dedicated people, processes, resources and organization to be successful, in order to move away from the ad-hoc, short-term relationships which typically yield little tangible fruit for either party.

Regular evaluations of the partnership, using appropriate KPIs, is necessary to ensure both parties (or all parties, in a multi-lateral relationship) keep on track to meeting agreed targets, especially on long-term research projects. This is an objective way of being able to decide on the value of the relationship.

### 4.3. Professional Development

Career development is an important consideration in HCT's applied research policy where the number and success of (i) research projects conducted and (ii) the number of papers published in peer-reviewed international journals are key criteria for promotion of faculty into senior positions. The wide range of professional and academic experience necessary to be able to conduct Applied Research effectively in this rapidly changing fourth industrial revolution world of work will require rapid and constant professional development of faculty to be able to keep up with technological advances.

### 4.4. Research Ecosystem

A research ecosystem necessarily extends beyond HCT to include other HEIs and industry bodies. However, from HCT's perspective, key elements of establishing or being part of a successful applied research ecosystem are talent, resources and governance. And with many potential players in the ecosystem, a key factor for HCT to succeed

in an ecosystem is to concentrate on an area of research expertise that it can become well known for, in order to distinguish itself from other players in the ecosystem. This would help to focus HCT's contribution to any research collaboration effort.

However, key drivers of a successful research ecosystem are external to HCT such as (i) strong government support, (ii) leadership at the national level with a vision to shape the future of tertiary education, (iii) financial resources and (iv) a reliable digital and telecommunications infrastructure. All of these drivers are in ample availability here in the UAE it remains for the HEIs to establish multilateral relationships with each other and with industry partners to establish the ecosystem.

### 4.5. Research Culture

To establish a sustainable research culture at HCT, there are five considerations that must be taken into account at the institutional level - (i) the contribution of research to teaching, (ii) providing incentives for research, (iii) time and (iv) not being afraid to fail. Taking each one of these points in turn:

- Contribution of research to teaching suggests that the output of research should feature in teaching as an integrated loop that encourages all students and learners to increase their interest in research. This would also help move HCT away from the current mindset that distinguishes faculty that teach from those that conduct research. Integrating research into teaching would bring all faculty into current research being undertaken across the institution, if only to help them understand it so that they can integrate it into their teaching.
- Providing incentives for research extends beyond the current main incentive at HCT which is the likelihood of promotion. The President announced at the recent 2019 Annual Conference that the possibility of researchers being able to earn income through patents and intellectual property, created by their research, is now a real possibility. In addition, a well-structured research grant system now exists at HCT, of which two funding cycles with a total budget exceeding AED 6.5m have recently been completed. A third round for seed and interdisciplinary grants, and an industry matching fund were launched in May 2019. Seed grants are up to AED 10,000; Interdisciplinary grants are up to AED 200,000; and industry matching grants are up to AED 500,000.
- Time in this context refers to (i) the time that can be dedicated to research and (ii) the time necessary to develop an innovation. Regarding (i) the time that can be dedicated to research, distinction is not made in the Applied Research Policy how much time faculty can devote to research. It states that all faculty must spend at least 40 hours per week in teaching, research, service and/or administrative



duties to HCT and to the community with a standard 15 Credit Hours teaching load per semester plus 3 Credit Hours in summer term I. Therefore, with the above-mentioned incentives, the discretion is left up to the faculty to dedicate however many hours he/she feels are necessary to conduct quality applied research.

This will obviously impact (ii) the time necessary to develop an innovation where the main consideration for the faculty member must be to keep in step with the requirements of the industry partner they are collaborating with on the research project. Both of these will likely be negatively impacted if the faculty member is unable to devote the necessary time to the research project in the first place. Indeed, this has been the main concern of faculty - that the teaching load prevents them from being able to devote adequate time to research. Therefore, a novel approach is needed to address this issue which perhaps may arise from the suggestion above to further integrate research into the teaching pedagogy.

- iv. Not being afraid to fail is a very important trait of an innovation-centred organization. Excessive focus on getting research done right the first time goes against the very grain of conducting good, robust research. Therefore, the institution, culturally, must not be afraid to make mistakes (which might be costly in some cases) on the basis that we learn from these mistakes in our quest to innovate. The institution's appetite for risk may hence need to be re-assessed to encourage the taking of calculated risks where necessary.

## 4.6. Intellectual Property

HCT is an applied research institution with a focus on working with industry to resolve its real world problems. It is not a research university that conducts fundamental research. Therefore, a discussion on intellectual property is only significant in this document insofar as the institution seeks to develop an entrepreneurial business model by which this relationship with industry becomes a symbiotic one and on an enduring long-term basis.

Peer review of research is no longer conducted solely by university members. The refereeing or review of scholarly papers by experts has come to include degree holders who work in industry as well as academics.

### 4.6.1. Intellectual Property Policy

HCT has publicly stated that it wants its faculty to benefit from applied research and entrepreneurship efforts and, through its subsidiary CERT, this focus on commercialization will need to address the issue of ownership and use of knowledge generated from applied research activities. HCT does not currently have an Intellectual Property Policy but one will be needed to intermediate between applied research conducted and the industry for which that research is developed. This is to avoid conflicts of interest risk which increases exponentially as graduate entrepreneurs establish startup businesses based on applied research discoveries for industry partners.



# Strategic Objectives

## 5.1. Objective Profiles

In the context of HCT 4.0, the strategic objectives, and gap analysis, that relate to this Applied Research focal strategy are as follows:

### 'Establish industry-driven applied research ecosystem'

MILESTONE TO BE ACHIEVED	CURRENT STATE	DESIRED FUTURE STATE	ACTIVITIES TO ACHIEVE FUTURE STATE
<b>Establish Functional structure</b>	<ul style="list-style-type: none"> <li>• Dean of Faculty Affairs &amp; Scholarly Activities, and Sr. Specialist-Acad. Services established.</li> <li>• Applied Research, Innovation and Entrepreneurship Department established</li> <li>• Fund through a Strategic Initiative "build and sustain applied research capacity at HCT": 10m AED (04/2019-07/2020) established</li> <li>• 4 types of internal funds established</li> </ul>	A fully functional centralized Applied Research organization with clarified roles and responsibilities	<ul style="list-style-type: none"> <li>• Define Purpose</li> <li>• Develop Budget</li> <li>• Identify Roles and Role Descriptions</li> <li>• Define Activities for Roles</li> <li>• Define Role/Delegation Hierarchy</li> <li>• Assign Roles to People</li> <li>• Identify External funding sources (Private companies etc.)</li> </ul>

MILESTONE TO BE ACHIEVED	CURRENT STATE	DESIRED FUTURE STATE	ACTIVITIES TO ACHIEVE FUTURE STATE
<b>Establish Applied Research Systems</b>	<ul style="list-style-type: none"> <li>• In-house developed management system (proposal &amp; evaluation submission)</li> <li>• Drafts of policies and procedures are ready</li> <li>• Financial management is manual</li> <li>• Some software licenses are obtained through Divisions</li> </ul>	Operational software systems to support Applied Research	<ul style="list-style-type: none"> <li>• Finalize and formalize Policies and procedures</li> <li>• Complete and go-live with the Research Portal - the Public Visibility Platform for HCT Applied Research</li> <li>• Undertake a RMSS program with a number of projects for the below: <ul style="list-style-type: none"> <li>▪ Develop Grants Management System</li> <li>▪ Develop Ethics Approval Management</li> <li>▪ Develop Research Data Management etc.</li> <li>▪ Identify and obtain licenses for all necessary software to support research (e.g. SPSS, NVivo, EndNote) and Research Database</li> <li>▪ Set up a 'Research Clinic' for advice, training and support to researchers</li> </ul> </li> </ul>
<b>Establish Applied Research Partnerships</b>	Not started	Membership of at least one existing University Alliance	<ul style="list-style-type: none"> <li>• Identify fit-to-purpose University Alliance (s) for HCT (like Global Alliance of Technological Universities, Worldwide Universities Network)</li> <li>• Initiate communications with the chosen alliance with a view to gain membership</li> <li>• Finalize the memberships(s)</li> </ul>
<b>Establish Industry connections</b>	<ul style="list-style-type: none"> <li>• Several MoU exist through individual Faculty initiatives</li> <li>• Industry Relations Office maintains a list MoU with industry partners</li> </ul>	Formalized contracts of industry links/networks with a number of organizations through connections of faculty members, alumni and students	<p>Coordinate with the Industry Relations office to:</p> <ul style="list-style-type: none"> <li>• Identify industry/links of faculty members, Alumni, and other HCT employees and formalize the collaborations</li> <li>• Create and manage an ongoing repository of industry networks</li> </ul>
<b>Establish Centers of Excellence</b>	<ul style="list-style-type: none"> <li>• Survey of faculty expertise</li> </ul>	Create cross-campus Research 'Virtual Centres of Excellence' (VCoE) in the areas of strategic importance to HCT	<ul style="list-style-type: none"> <li>• Define Purpose and Scope of each VCoE</li> <li>• Allocate funding for the VCoE</li> <li>• Operationalize the VCoE (virtual, not brick &amp; mortar)</li> <li>• Create campus-based Research Groups under each VCoE</li> </ul>

**‘Establish a sustainable innovation ecosystem’**

MILESTONE TO BE ACHIEVED	CURRENT STATE	DESIRED FUTURE STATE	ACTIVITIES TO ACHIEVE FUTURE STATE
<b>Integration of eco-systems</b>	Not started	<ul style="list-style-type: none"> <li>• Build virtual innovation ecosystems hosted in InnCuVation spaces</li> <li>• Establish industry-driven applied research ecosystem</li> </ul>	<ul style="list-style-type: none"> <li>• Members of industrial project come together and meet at the InnCuVation spaces</li> <li>• Connect more faculty with the industry to do applied research activities</li> </ul>
<b>Increasing the number of capstone projects proposed and funded by industry 10% yearly</b>	Capstone graduation projects titles are currently proposed by faculty and sometimes it is blue-sky research	Build off-spin startup companies	<ul style="list-style-type: none"> <li>• Capstone projects titles proposed and funded by the industry</li> <li>• Capstone projects titles proposed and supervised by adjunct industrial faculty</li> <li>• Capstone projects titles proposed by faculty should be connected to industrial problems</li> </ul>

**‘Develop and enhance organizational learning’**

MILESTONE TO BE ACHIEVED	CURRENT STATE	DESIRED FUTURE STATE	ACTIVITIES TO ACHIEVE FUTURE STATE
<b>Increasing the number of courses that use project based learning</b>	Student-centered learning	<ul style="list-style-type: none"> <li>• Promote individual ownership of lifelong learning</li> </ul>	Courses to include using in courseworks <a href="http://www.coursera.org">www.coursera.org</a> , <a href="http://www.edx.org">www.edx.org</a>
		<ul style="list-style-type: none"> <li>• Embed intelligent and innovative teaching and learning methods</li> </ul>	Project-based learning
<b>Digital Campus</b>	Just commenced	For AR to benefit from the Digital Campus, this should provide for: <ul style="list-style-type: none"> <li>• Real-time access to various types of integrated data</li> <li>• Mature analytical tools and predictive models</li> </ul>	<ul style="list-style-type: none"> <li>• Account for applied research requirements (functional and non-functional) from the inception phase of the Digital Campus</li> </ul>
<b>Knowledge Management System</b>	To be launched after Digital Campus, approx. late 2020, early 2021	System developed where best practice, lessons learned, organizational assets are stored, shared, updated, and disseminated	<ul style="list-style-type: none"> <li>• AR will contribute to this KMS via research and applied projects’ outcomes that will directly lead to organizational learning, best practice, and continuous improvement.</li> </ul>

## 5.2. Performance Management

This section provides a two year trend summary of the KPIs, for which data exists, which measure the objectives profiled in section 5.1 above.

OBJECTIVE	KPI	2016-2017		2017-18		2018-19		2021
		Actual	Target	Actual	Target	Actual	Target	Target
<b>Establish industry-driven applied research ecosystem</b>	Research Awards	N/A	N/A	N/A	N/A	5	4	6
	Spend on Research & Innovation	N/A	2%	5.33%	3%	8.59%	3%	5%
	Active Applied Research Projects with Students Participation	N/A	N/A	15%	15%	31%	33%	40%
	SCOPUS Papers per Faculty Member	0.13	0.1	0.16	0.2	0.16	0.3	0.5
<b>Establish a sustainable innovation ecosystem</b>	Innovations based on employee suggestions	N/A	N/A	N/A	N/A	N/A	N/A	72%
	Employees Trained in Innovation	0.52%	2%	6%	4%	15%	17%	21%
<b>Develop and enhance organizational learning</b>	Best practice ideas shared	N/A	N/A	N/A	N/A	83	90	150
	Communities of practices	New	New	New	New	New	New	New
	Knowledge articles published	New	New	New	New	New	New	New

## 5.3. Projects

This section highlights the initiatives being managed for each objective relating to this focal strategy.

OBJECTIVE	STRATEGIC INITIATIVE	START	END	PROGRESS	PERFORMANCE
<b>Establish industry-driven applied research ecosystem</b>	Sustained Focus on developing Applied Research	04/2019	07/2020	0%	Not Initiated
<b>Establish a sustainable innovation ecosystem</b>	Building Employee's Innovation Capabilities	04/2019	09/2020	0%	Not Initiated
<b>Develop and enhance organizational learning</b>	Digital Campus	01/2018	02/2020	55%	On Track



# Value Proposition

This section details the value to be delivered to beneficiaries of this Applied Research strategy. The beneficiaries are identified, with their requirements, along with key services being offered to them and the resultant core value proposition.

## 6.1 Beneficiary Profiles, Requirements and Key Services Provided

<b>Beneficiary Profile</b> <i>(the unique characteristics that defines a beneficiary of this strategy)</i>	<b>Beneficiary Requirements</b> <i>(beneficiary aims)</i>	<b>Beneficiary Benefits</b> <i>(outcomes and benefits sought by beneficiaries from this strategy)</i>	<b>Beneficiary Challenges</b> <i>(challenges which this strategy would help alleviate)</i>	<b>Services Provided</b> <i>(services provided by HCT through this strategy)</i>	<b>Value Created</b> <i>(value delivered to beneficiary)</i>
<b>Student</b>	Start new enterprises	Support for generating ideas and undertaking new, innovative projects fueled by cutting edge research	Lack of generation of innovative ideas and projects	<ul style="list-style-type: none"> <li>• Connection to Industry for access to real-life projects</li> <li>• Training and access to resources and software for research</li> <li>• Opportunities for commercializing research output</li> </ul>	<ul style="list-style-type: none"> <li>• Training and access to resources to undertake new, innovative projects to solve real world problems</li> <li>• Support to commercialize the research output to be widely adopted</li> </ul>
<b>Faculty</b>	Establish HCT as premiere applied research institution in the UAE and the world	Support for creation of new applied knowledge that can <ul style="list-style-type: none"> <li>• enhance learning and teaching</li> <li>• provide solutions for current industry challenges</li> </ul>	Lack of access to funding and other resources (technical, knowledge base) to conduct and publish research  Lack of collaboration with international peers for productive research	<ul style="list-style-type: none"> <li>• Support for Publication of Research Output (Conference funding etc.)</li> <li>• Funding to conduct research</li> <li>• Training and access to resources and software for research</li> <li>• Access to University Alliances through HCT's membership</li> </ul>	<ul style="list-style-type: none"> <li>• Training and access to resources to undertake research to enhance learning and teaching capabilities</li> <li>• Applied research activity improves the reputation and raises the profile of HCT which improves esteem by faculty for the organization, attracts talented staff, students and funding to future research</li> </ul>

<b>Beneficiary Profile</b> <i>(the unique characteristics that defines a beneficiary of this strategy)</i>	<b>Beneficiary Requirements</b> <i>(beneficiary aims)</i>	<b>Beneficiary Benefits</b> <i>(outcomes and benefits sought by beneficiaries from this strategy)</i>	<b>Beneficiary Challenges</b> <i>(challenges which this strategy would help alleviate)</i>	<b>Services Provided</b> <i>(services provided by HCT through this strategy)</i>	<b>Value Created</b> <i>(value delivered to beneficiary)</i>
<b>Government</b>	<p>Improve UAE's economy</p> <p>Improve the status of UAE higher education institutions in the world</p>	<ul style="list-style-type: none"> <li>• Support for publication of research output in high-ranked outlets to enhance institutional standing/ranking of HCT in the world</li> </ul>	<p>Lack of applied research output to implement new ideas to form new commercial ventures</p>	<ul style="list-style-type: none"> <li>• Publication of research output in high-ranked outlets to enhance institutional standing/ranking in the world</li> <li>• State-of-the-art applied research output as the foundation of new innovative enterprises/start-ups in UAE</li> </ul>	<ul style="list-style-type: none"> <li>• Support for Publication of research output in high-ranked outlets to enhance institutional standing/ranking in the world</li> </ul>
<b>Manager, Academic Programs &amp; Applied Research - Future &amp; Strategy Division</b>	<ul style="list-style-type: none"> <li>• Building a strong relationship with the community and enhance the industry partnerships, in order to achieve HCT objectives and be active in applied research and boost quality of graduates and faculty.</li> <li>• The applied research and scholarly activities should have significant role to developing and diversifying all sectors of the economy and enhancing the efficiency and effectiveness of public and private entities in the UAE; while effectively preparing students for current and future careers.</li> <li>• Identifying the role of the Product Management department within the applied research system to participate effectively in achieving the HCT Objective D5 "Establish industry-driven applied research ecosystem" and establishing dynamic relationships with UAE government and private entities and organizations to produce research outcome can be implemented and support the UAE socio-economic vision, through problem solving research and consultancy services.</li> <li>• Promoting applied research into both the scholarship of teaching and learning, and the various disciplines taught by the HCT faculty to develop applied research capabilities.</li> <li>• Extend the research fund opportunities to external sources and do not depend only on the internal research fund by HCT.</li> </ul>	<ul style="list-style-type: none"> <li>• Advancing community relationships</li> <li>• Sectoral and targeted contributions to the UAE industry</li> <li>• Nurturing HCT 4.0 curriculum and extra-curricular scholarly activities</li> <li>• Diversifying funding opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Setting comprehensive strategy to tackle diverse businesses' needs and intellectual productivity by HCT applied research</li> <li>• Bridging the gap between applied research and HCT 4.0 applied research</li> <li>• Developing processes to seek diverse funding opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Articulating applied research as a main product of HCT</li> <li>• Regulate and organize the multi-function processes between the academic departments and applied research through a nexus of scholarly undertakings</li> <li>• Establishing industry-driven applied research ecosystem</li> <li>• Establish dynamic relationships with UAE government and private entities and organizations to produce research outcomes that can be implemented and supporting the UAE socio-economic vision, through research and consultancy services with problem solving focus.</li> </ul>	<ul style="list-style-type: none"> <li>• Reinforcing applied research culture and processes</li> <li>• Act as a connecting force across the spectrum of HCT stakeholders</li> <li>• Provide connections with industries and leverage solutions driven relationships</li> </ul>

<b>Beneficiary Profile</b> <i>(the unique characteristics that defines a beneficiary of this strategy)</i>	<b>Beneficiary Requirements</b> <i>(beneficiary aims)</i>	<b>Beneficiary Benefits</b> <i>(outcomes and benefits sought by beneficiaries from this strategy)</i>	<b>Beneficiary Challenges</b> <i>(challenges which this strategy would help alleviate)</i>	<b>Services Provided</b> <i>(services provided by HCT through this strategy)</i>	<b>Value Created</b> <i>(value delivered to beneficiary)</i>
<b>Industry partners</b>	<p><b>Clients (Existing Companies):</b></p> <ul style="list-style-type: none"> <li>Identify, increase and accelerate intrapreneurship, innovation, tech transfer, and commercialization efforts</li> </ul> <p><b>Clients (Startups):</b></p> <ul style="list-style-type: none"> <li>Identify and pursue market opportunities; develop, test, market new products and services; access know-how and resources; fund and launch ventures; scale production and market presence and pursue a profitable “exit” strategy</li> </ul> <p><b>Other Sources of Value &amp; Enablers:</b></p> <ul style="list-style-type: none"> <li>Access, contribute, share, learn and increase capacity, information, and resources and improve organizational capabilities and future opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Develop innovation culture and capabilities</li> <li>Develop new products and new markets</li> <li>Improve productivity, competitiveness, and sustainability</li> <li>Improve processes for higher quality and efficiencies and lower costs (higher profitability)</li> </ul>	<ul style="list-style-type: none"> <li>Lack of business expertise and technical know-how</li> <li>Lack of resources</li> <li>Lack of skills, tools, processes</li> <li>Fragmented innovation and tech transfer efforts</li> <li>Highly competitive environment relying on applied research</li> </ul>	<p><b>Clients:</b></p> <ul style="list-style-type: none"> <li>Extension &amp; Assistance Services (Information, Tools, and Processes) to infuse new thinking and innovation; improve productivity, quality, and competitiveness; adopt and develop new technologies; and accelerate tech transfer and commercialization opportunities</li> <li>Access New Markets Sourcing; Training; Networking</li> </ul> <p><b>Collaborators / Sources &amp; Drivers of Value / Other Enablers:</b></p> <ul style="list-style-type: none"> <li>Program Delivery &amp; Support</li> <li>Supply Chain Efficiencies</li> <li>Training &amp; Networking</li> <li>Competitive Advantage</li> </ul>	<p><b>Applied Research product delivery through:</b></p> <ul style="list-style-type: none"> <li>Opportunity Identification</li> <li>Research &amp; Development</li> <li>Training &amp; Support</li> <li>Business Advisors</li> <li>Technical Experts</li> <li>Expert Processes</li> <li>Results/Impacts Measurement</li> <li>Continuous Improvement Support</li> </ul>



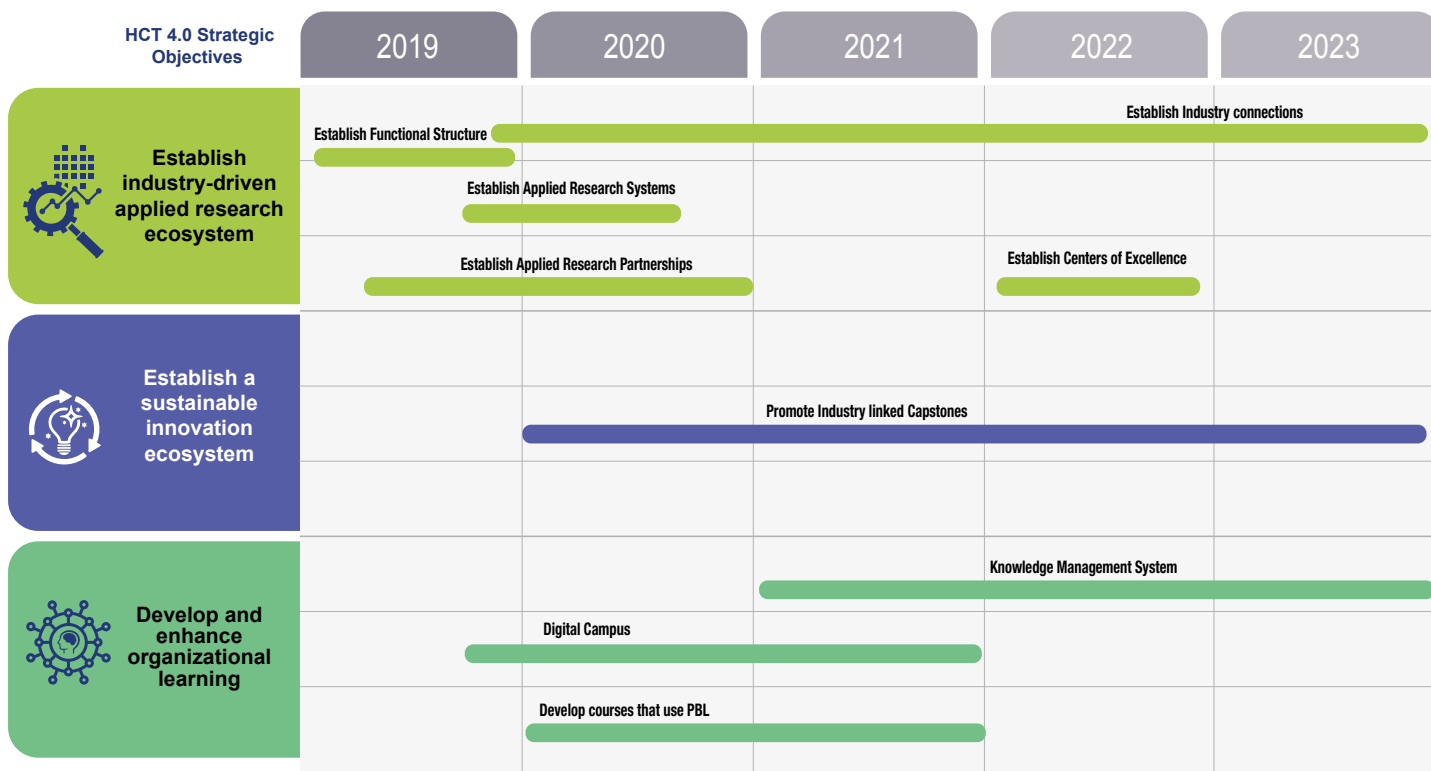


# Strategic Roadmap

## 7.1 Milestones

With regard to the milestones to be achieved for this strategy, as presented in section 5.1 above, they are hereby presented as a roadmap over the next five years:

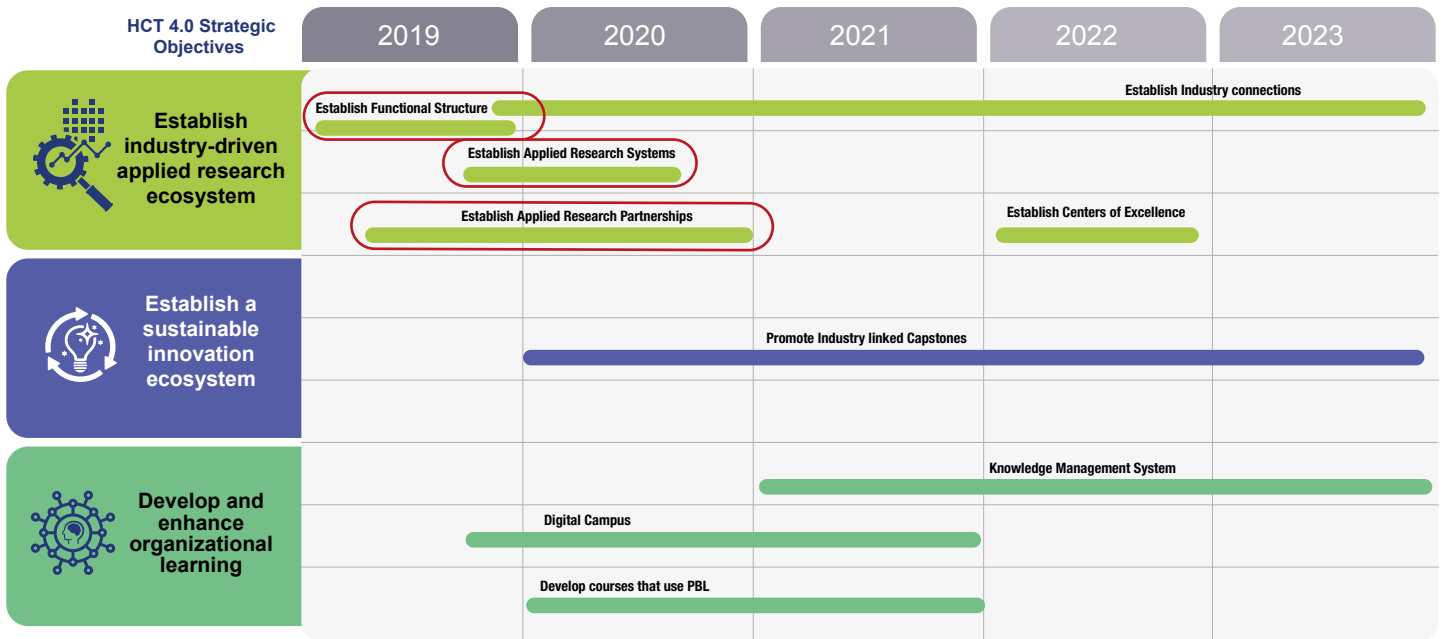
### Applied Research Roadmap Milestones



## 7.2 Strategic Priorities (over the next 12 months)

Combining section 7.1 and 7.2 above, the strategic priorities for this focal strategy over the next twelve months should focus on the highlighted milestones below, due to their strategic importance and the fact that they have already commenced, and the development of the necessary capabilities to progress or achieve them:

### Applied Research Roadmap Milestones



# 8

## Glossary

TERM	DEFINITION
<b>Creativity</b>	<p>Creativity is the result of three interrelated qualities - motivation, expertise and imaginative thinking - that coalesce within a single entity (individual or corporate).</p> <p>– <i>Researching Higher Education, Jennifer Case</i></p>
<b>FreeZones</b>	<p>Free-trade zones (FTZs) are special economic zones set up with the objective of offering tax concessions and customs duty benefits to expatriate investors. There are more than 30 Free Zones operating in Dubai. FTZs in Dubai and the UAE are governed pursuant to a special framework of rules and regulations.</p> <p>– <i>Wikipedia</i></p>
<b>Applied Research</b>	<p>Applied Research is the act of taking to industry stakeholders with the view of ensuring that your assessment practices have outcomes for students that meet the needs of industry.</p> <p>– <i>Australian Skills Institute</i></p>
<b>Innovation</b>	<p>the aspiration of individuals, private institutions and governments to achieve development by generating creative ideas and introducing new products, services and operations that improve the overall quality of life.</p> <p>– <i>UAE National Innovation Strategy</i></p>
<b>Knowledge Economy</b>	<p>The knowledge economy is the use of knowledge to create goods and services. In particular, it refers to a high portion of skilled workers in the economy of a locality, country, or the world, and the idea that most jobs require specialized skills.</p> <p>– <i>Wikipedia</i></p>
<b>Milestone</b>	<p>A significant stage or event in the development of something.</p> <p>– <i>Dictionary</i></p>
<b>Strategic Partnership</b>	<p>A strategic partnership (also see strategic alliance) is a relationship between two commercial enterprises, usually formalized by one or more business contracts</p> <p>– <i>Wikipedia</i></p>



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