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We create diverse connections that drive positive change.
2019-2020 has been a year of transformation. It will stand out for the UK’s historic departure from the EU and for the onset of the Covid-19 pandemic. These of course impacted KTN, as they did those we represent, but they also highlighted how important our work is.

Looking more internally to start this report, it was also the year I joined KTN. So much has happened since then, and it has been a pleasure and privilege to build on the legacy left by Chris Warkup (CEO, 2014-19) and Sue Dunkerton (Interim CEO until August 2019) to guide and move forward our work which becomes ever more critical in these changing times.

It is clear that KTN’s assets are our people; the knowledge they hold, the relationships they have and the skills to bring these together and make connections others would not see, but which have demonstrated real impact in bringing solutions to real-world problems.

These assets are what is going to help us achieve our short and long-term goals; bringing immediate value and impact to businesses we work with, and contributing and influencing the wider UK economy. Dotted throughout this report are some great examples of how this is already happening.

Feel free to share any that are relevant to you or inspire you. As for highlights, this year saw us play a hand in the development of 4Manufacturing®, a diagnostic tool relevant to many businesses seeking to boost productivity and competitiveness, and the ongoing development of Innovation Exchange (iX) which matches industrial challenges to solutions from SMEs across various sectors - think of this as a private Small Business Research Initiative (SBRI), if you are familiar with the public sector programme which we also support.

We have made powerful connections during the year, partly through managing more than 500 events, and reaching out to in excess of 220,000 people in our network, but more specifically through targeted interventions such as building new communities through our Innovation Networks (previously named Special Interest Groups (SIGs)).

We have also facilitated over 60 new collaborations, of people and organisations previously unknown to each other (mostly UK based), and then built new international connections through missions in such fields as Anti-Microbial Resistance in Germany, Quantum Technology in the United States, and AgriFood in Colombia. Feedback from our network has talked about the transformational impact such new connections make for them.
We have used our expertise and connections to help shape the future, through our ability to convene groups in response to questions from the likes of Innovate UK, where we have helped steer the creation of funding opportunities in the Industrial Strategy Challenge Fund (ISCF), and the selection of awards given. More specifically, we are helping shape the UK preparedness for 5G through UK5G which we deliver in partnership with Cambridge Wireless.

We will see more of our Future Shaping work going forward thanks to a new initiative during 2019-20 to establish a new Insights and Policy Team within KTN, building on the data we hold and the insights we can draw from that and the data from our wider network.

The onset of Covid-19 at the end of 2019-20, saw us making some rapid adjustments, not least to allow us to respond to some specific requests from Government for urgent supply chain support. These obviously rolled over into the current year, but they reinforced our growing realisation that we can make positive change and do so at pace, a huge confidence booster.

The nation’s health and wellbeing came to the fore and showed our impact must be much more than economic, and we ended the year considering how we can contribute both to the UK and globally for environmental and societal good alongside economic – we also recognise it is increasingly difficult to separate them, and rightly so. This informed our new 5-year strategy that will see us deliver more than just economic transformation but positive change for the world.

None of this would be possible without our people and our influence and leadership – KTN enjoys a culture of creativity, openness and inclusivity, we thrive because we live our values and can see the impact we make. This also brings responsibility, and I wanted to conclude with our commitment to our own people and also to the role we play in innovation in the UK, in championing equality, diversity and inclusion in everything we do and showing how we are all stronger by embracing alternative ideas and approaches – where would innovation be without transformation?
Chair

Foreword

Not only has it been a transformative year, 2019/20 has also been one of transformation for KTN’s leadership. We said farewell to Chris Warkup, the outgoing CEO who managed the incredible feat of consolidating KTN’s 14 separate organisational structures into a single, coherent and collaborative company delivering far greater economic impact to the UK, and said hello to Alicia Greated.

Our new CEO (from August 2019) has so ably picked up the baton and taken on the new challenge of transforming KTN for its resilient and dynamic future. She is already driving positive change within the organisation with the development of its first company-level strategy, and has done so against the backdrop of tumultuous change in the world around us.

With so much going on, it can be difficult to think of the world we operated in for most of 2019, but against the backdrop of Brexit and the embedding of UK Research & Innovation (UKRI), KTN has maintained its ongoing support of innovation and business, building new communities and creating diverse connections. UKRI has given us the opportunity to further develop our research relationships, building on the excellent work delivering the Knowledge Transfer Partnership programme seeking out receptive businesses for new collaborations, thus bringing forward the emerging and transforming capabilities of the future. With Brexit, we redoubled our efforts to maintain our strong relationships with Europe through the ongoing UK commitment to European programmes. But we also put much greater emphasis onto the rest of the world, culminating in the formation of KTN Global Alliance and its first programme, in collaboration with Innovate UK and Global Research Challenge Fund (GCRF), to build innovation collaborations and infrastructure in South Africa, Kenya and Nigeria. We are also partnering with other nations throughout the world on Global Expert Missions, where we build intelligence on key innovation trends and the supportive national or regional infrastructure around them. This ensures the UK remains the partner of choice for future international collaboration. Innovation does not recognise country boundaries.

Covid-19 brought an abundance of new challenges at the end of the year and I have been truly impressed by KTN’s response to this, both in supporting its own people through drastic changes in working and life patterns, and in stepping up to address some urgent requests from government and industry in helping the UK to respond to new demands on healthcare, food availability (for all) and infrastructure. The UK and other nations will be learning from the transforming pressures placed upon us and the solutions which have come into practical reality. KTN has already started this, updating products and offers, going digital where appropriate, and preparing itself for the future.

That’s why KTN is well positioned to support innovation into the future and is resilient to do so however the world around us may transform. There has never been a time when positive change is more needed and, with Alicia at the helm and an amazing team of motivated and creative professionals, KTN will be part of that change. I remain proud to be part of it.

David Lawrence,
Chair, KTN
KTN exists to connect innovators with new partners and new opportunities beyond their existing thinking – accelerating ambitious ideas into real-world solutions.

Executive Team

Dr Alicia Greated  
*Chief Executive*

Sue Dunkerton OBE  
*Director*

Catherine Callow  
*Director, Operations*

Fran McIntyre  
*Director, Reach & Engagement*

Dr. Colin Tattam  
*Director, Application*

Dr. Steve Welch  
*Director, Ideas & Capability*

Jon Kingsbury  
*Director, Strategic Development*

Board Directors/Officers

Dr David Lawrence  
*Chair*

Dr Alicia Greated  
*Chief Executive*

Catherine Callow  
*Company Secretary*

Julia Brown  
*Prof. Nick Lieven*

Dr. Iain Roche  
*Dr. Richard Judge*

Roya Croudace  
*Dr. Ruth Mallors-Ray OBE*
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(Apr 2019 - Mar 2020 unless stated otherwise)

*As of 22 September 2020
The world is changing rapidly, one third of the children born today are expected to reach the age of 100. How do we have a ‘good’ old age? The six largest industrial clusters in the UK release around 40m tonnes of CO2 – that’s 1/3 of the UK’s industrial emissions. How do we reduce that? 80m tonnes of plastic packaging is produced annually and 8-12m tonnes enter the marine environment every year. How do we make plastic more sustainable?

From Healthy Ageing to Industrial Decarbonisation and from Transforming Foundation Industries to Smart, Sustainable Plastic Packaging, the government’s Industrial Strategy Challenge Fund (ISCF) aims to tackle these and other issues head on, applying science and innovation to challenges that impact on all our lives.

Since the inception of ISCF in 2017, KTN has been central to the delivery of all three waves, working with UKRI on over 20 Challenges to shape the funding calls, anchor co-investment, engage the right businesses, enable collaborations and convene cross-sectoral challenge communities.
Industry 4.0 will transform manufacturing. Realising the potential of the opportunities it has to offer is a top priority for manufacturers in the UK, and worldwide. Developed in partnership with Innovate UK, 4Manufacturing® is a diagnostic tool with a support framework that helps manufacturers to deploy new digital technologies to boost productivity and competitiveness.

As awareness and take up of the tool continues to permeate across industry, one of our partners in Northern Ireland, Invest NI has been using the tool to good effect, and to drive positive change. Invest NI is seeing how the tool helps upskill its own staff on the complex, diverse topic of digital manufacturing. That in turn helps their businesses, which are starting to see increased productivity. Invest NI’s experiences with 4Manufacturing® are helping us make it even better. The UK is facing a huge challenge in its mission to achieve a Net Zero carbon future, and as well as removing carbon from industrial processes, other schemes like reuse, recycle and remanufacture will play an important role. KTN has provided instrumental support, particularly in the early stages, to Rype Office, a circular economy office furniture company which has remanufactured over 18,000 items of furniture saving clients over 1 million kilograms of embodied carbon, compared to buying new.

KTN sourced funding to help launch the business and refine the business model and proposition and has made introductions to key collaborators that helped it shape the design of their products and routes to market. “KTN really understood what we were trying to do and have been a great support in helping us achieve our objectives to-date. There are a great bunch of people at KTN who provide small businesses with excellent support and advice and make introductions to the right people who can really make a huge impact at the pivotal growth stages.”
Agrifood

With ever changing economic, political and logistical circumstances, it is now more important than ever that the UK collaborates with international partners to build a strong and resilient AgriFood supply chain.

In March, KTN’s team of experts successfully led on building new AgriFood collaborations between Colombia and the UK, resulting in an agreement signed between a UK and Colombian company and promising connections that will be followed up by all of the 16 companies on the mission.

Another highlight has been KTN’s involvement in the launch of the Global Challenges Research Fund (GCRF) AgriFood Africa programme, a new £26 million five year initiative to realise sustainable African agriculture and food production systems to help alleviate poverty, enhance prosperity and improve wellbeing through UK and African partnerships. KTN’s AgriFood team are responsible for the £2m ‘Dissemination and Coordination’ strand of activities within this wider programme.

On the domestic front, KTN has enabled cutting-edge imaging technology, reinforced with state-of-the-art thinking in machine learning, to benefit the AgriFood industry.

“KTN have had a transformational impact on helping us to deploy our Machine Vision skills to collaborate with Agriculture and Food industry partners. We traditionally worked in other industry sectors, but KTN brokered our first collaboration in AgriFood, a project that developed a new imaging system to monitor the health and welfare of dairy cattle. This has led to over 16 subsequent new projects in the wider AgriFood sector.”

“We have really benefitted from the ability to network through KTN. Their funding expertise and knowledge of the AgriFood industry has led us to many new innovation opportunities that we would not have identified ourselves. Several of these projects have resulted in products that are now reaching a commercial stage”.

Professor of Machine Vision and Director of the Centre for Machine Vision (CMV) in the Bristol Robotics Laboratory at University of the West of England.
To establish a network of innovators so powerful its ideas will change the world.
2019/20 saw growth for Innovation Exchange (iX), KTN’s cross sector programme supporting innovation transfer by matching industry challenges to innovative companies from other sectors.

From the Energy sector, iX has expanded into Urban Systems, Chemistry, Complex Systems and Transport. On the global front, KTN is launching a series of challenges with the British Antarctic Survey on decarbonising their operations.

Infrastructure Industry Innovation Partnership (i3P) continues to go from strength to strength with innovation remaining a critical priority standing firmly behind the Restart, Reset, Reinvent: Construction Leadership Council’s roadmap to recovery.

The ambition remains to foster the environment needed for the industry to work together in a controlled and systematic way; the i3P Way. With clear processes for the delivery of innovation, including decision gateways for evaluating ideas and de-risking them by trialling with client members, as well as a soon to be launched new subscription model, this will enable i3P members to participate in a flexible and appropriate way that understands the diversity of member organisations.

The Strategic Priority Themes programmes are working constructively with members to deliver a range of industry projects with opportunities for wider engagement. To date i3P has invested £150k into industry projects and has helped members secure around £5m of ISCF Transforming Construction funds.
Digital Economy and Creative Industries

New digital technologies are creating more efficient workflows, increasing efficiency and creating greater productivity for UK industry. And KTN is playing a key role bringing different industries together to facilitate their development and drive their adoption.

The Digital and Creative team at KTN supports innovation activity across a multitude of sectors and niches including applications around Internet of Things, Data, AI in the Fin-tech Service sector, Immersive technologies, Cyber security, media content generations and 5G to name a few.

KTN is a major delivery partner in UK5G working with the entire supply chain in 5G from suppliers and mobile network operators through to end-users. From April to September 2019, KTN (under the UK5G umbrella) delivered a set of six collaboration-driven workshop events across the UK for the DCMS (Department for Digital, Culture, Media and Sport) Rural Connected Communities Testbed programme with the endgame of accelerating the adoption of 5G by businesses in the UK.

As a result of this work, seven collaborative partnerships won a share of a £35m innovation funding pot; setting up in Yorkshire, Gwent, Monmouthshire, Orkney, Wiltshire, Nottinghamshire, Dorset, Shropshire and Worcestershire, to deliver practical 5G testbeds for applications in tourism, mental health, health and social care, emergency services, coastal safety, environmental and agricultural management.
KTN is helping to transform the future of the UK’s transport systems. In Rail, KTN is working with the Department for Transport and Innovate UK to deliver the 2020 First of a Kind (FOAK) competition to accelerate innovation in rail.

At January’s briefing event, 76% of the 569 attendees indicated they made up to 10 new connections.

“From the event we have already been invited to present to two condition monitoring working groups and have arranged a meeting with a potential customer to scope further operational field trials.”

The ISCF Future Flight Discovery Workshops for the Phase 1 applicant winners saw 167 pitch presentations, leading to 340 introductions. 15 staff from across KTN developed a framework to create a roadmap of technologies to illustrate the potential of future innovations in air transport.

KTN is working with the connected and autonomous vehicle (CAV) innovation community; making more than 118 introductions between different organisations and setting up more than 20 collaborations.
Health

The Health Team at KTN has been as active as ever across the key thematic areas of Medicines, Medical Technologies and Digital Health through this past year.

The Team continues to work closely with the Industrial Strategy Challenge Fund (ISCF) funded themes from across the sector. It secured funding for a Medicines Manufacturing Challenge community which builds on the success of the Wave 1 ISCF theme in medicines manufacture, which was well received by the Medicines Manufacturing Industry Partnership and the Bio-Industry Association Manufacturing Committee.

The Health Team also worked with the KTN’s International Team to deliver a range of Global Expert Missions, such as working with the Science and Innovation Network and Department for International Trade in Germany to successfully deliver the Anti-Microbial Resistance (AMR) Global Expert Mission to Germany. KTN took representatives from academia, industry, and Innovate UK to meet with relevant German stakeholders to explore opportunities for cooperation to tackle AMR.
The Health Team’s work on the AI in Health Innovation Network resulted in the Merseycare User Centred Design Workshop project. Supported by colleagues in Design, Complex Systems, and Health, and from the Knowledge Transfer Adviser team, an interview format was adopted to obtain clinical and user experience of mental health services within the biggest Mental Health Trust in England. KTN held workshops to enable the Merseycare team to develop links to SMEs that could provide solutions to specific challenges and, potentially, be future collaborators. All of the SMEs present (self-funded) considered the day valuable in its own right.

KTN, in conjunction with Innovate UK and the Department for Business, Energy and Industrial Strategy, organised a highly successful showcase event for all of the projects funded in rounds 1 to 4 of the Digital Health Technology Catalyst.

By March it was clear that the Covid-19 pandemic was imminent. As alluded to earlier in the report, the Health Team worked tirelessly on a range of immediate activities related to the UK Government’s response to the pandemic. The team worked with Government Departments and Innovate UK to provide a link into UK industry to facilitate engagement with SMEs and Large Enterprises and in doing so helped the NHS access life-saving equipment and services at a critical time.
2019/20 saw the launch of the ISCF Wave 3 Driving the Electric Revolution (DER) programme, an £80m investment aimed at accelerating the push to Net Zero by catalysing green innovation in Power Electronics, Machines and Drives (PEMD) technologies across all sectors of the economy including aviation, automotive, energy generation, robotics, marine and rail.

KTN has delivered scoping and competition briefing events to the industrial and academic communities for DER Fast Start and DER centres of excellence investments as well as direct company engagements. During this time the KTN DER community was grown from 200 to 800 individuals through a combination of event management, effective marketing communications and personal engagement. As the community grows, KTN is seeing increased awareness and uptake of the fund, leading to higher quality, more competitive bids, whilst increasing the diversity of the applicants.
Connecting for Positive Change.
New quantum technologies have the potential to transform a range of industries – from cyber security to defence and healthcare and while applications are still some way off, significant leaps forward are being made. In October 2019, Google demonstrated ‘Quantum Supremacy’, where a quantum computer solves a problem that a classical computer cannot in a feasible amount of time.

Making the most of these opportunities for the UK will require global collaboration and our Global Expert Missions are one way of achieving that. In March, our Quantum Mission saw a delegation of 16, drawn up from industry, Innovate UK, EPSRC, and the four UK National Quantum Technology hubs, travel to Washington DC, Boulder, San Francisco and Los Angeles.

This Mission, headed by Sir Peter Knight FRS, involved meetings with representatives from The White House, NASA, the FBI, SMEs and large companies such as Lockheed Martin, Honeywell, and IBM. Whilst it is too soon to say what the impact of these interactions will be, a desired outcome would be an international funding collaboration.
The Knowledge Transfer Partnerships (KTP) programme has been running for nearly 45 years, creating effective collaborations between innovative organisations and the UK’s Knowledge Bases (universities and research organisations) to deliver significant economic, societal and environmental benefit. KTN’s team of 31 highly experienced Knowledge Transfer Advisers facilitate and help steer every KTP project – approximately 800 during 2019/20, spanning all sectors and geographies in the UK.

2019 saw KTN introduce a valuable new resource for KTP: a dedicated website. As well as providing a new information and knowledge hub for all things KTP, the site has created a platform to highlight the opportunity of the KTP Associate roles to potential graduates and a showcase for current KTP Associate vacancies.

“For me, the best thing about being a KTP Associate is the number of opportunities I had to get involved and make a noticeable impact in the company. Being able to lead so many various projects has allowed me to grow my skills and confidence quickly, and has accelerated my career progression”.

KTP Associate, Sarissa Biomedical/Aston University

Also new for 2019 was the introduction of a complementary programme to the “classic” KTP: the Management KTP (mKTP). The £25m expansion of the KTP scheme is supported by the Department for Business, Energy and Industrial Strategy (BEIS). mKTP is focussed on expanding management effectiveness and enabling business transformation by linking companies with UK Business Schools.
KTPs are a fantastic route for companies to innovate and revitalise, and as frameworks through which to develop strong, long-lasting relationships with local universities. The structure of the KTP and the structure of the process of qualifying for a KTP enable a deliverable commercial benefit to any organisation’s knowledge.

KTP Best of the Best Awards Winner, BemroseBooth Paragon.
Through our Innovation Network programme, we’ve united some of the best minds and greatest thinkers from across the UK in areas of innovation, development and new technologies. Together, they are charged with finding answers to some of the world’s most significant challenges, to help introduce positive change and shape our collective future.

KTN’s 2019/20 portfolio includes the following: Robotics and Artificial Intelligence (RAI); Quantum Technologies; Zero Plastic Waste; Geospatial Insights; Neurotechnology; Nature Inspired Solutions; Microbiome; Materials for Composites; and Immerse UK.

Examples include:

- Introduction of Atkins to Telespazio Vega. The two organisations have since had multiple capability discussions and jointly pursued a number of tenders and proposals including European Space Agency ‘pipeline monitoring’ and ‘water leak detection’ calls and two commercial opportunities. Improved co-ordination between academic microbiome research and UK business innovators.

- Introduction of BASF to Sheffield University to understand how biodegradable films can be used to help with agricultural firms’ plastics issues. BASF have fed into two project proposals being written by Sheffield University.

- Introduction of Magstim to Lucid Innovation. Magstim were developing a medical device and needed software developing for the device – this resulted in a £500k B2B collaboration between the two organisations.

Highlights over 2019/20 include:

Facilitation of over 1000 Company Engagements, more than 350 Introductions and just short of 60 collaborations across the portfolio.
## Expenditure

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