



DAWN OF THE NEOCITY

Anthony Tucker-Jones discusses with Chester Kennedy, BRIDG CEO, Florida's brand new high-tech facility and its top-secret work

The high-tech facility cost \$70 million to develop

ATJ: The opening of your headquarters at NeoCity, Osceola County, Florida earlier this year was heralded as one of the most advanced fabrication labs in the world. What was the impetus for Florida putting itself on the high-tech map?

CK: Florida has longstanding and world-recognised strength in key targeted industries such as optics and photonics, simulation and training, aerospace and defence, among others. Leveraged with access to more than 500,000 students within a 100-mile radius of the Orlando region, this project provided the opportunity to transform the economic landscape and lift the economic prosperity of our region and state. With the recent opening of the BRIDG facility, Florida will be positioned to capture a significant part of that future economy.

ATJ: Would it be fair to say that BRIDG is putting the high-tech into high-tech?

CK: Absolutely.

ATJ: Can you tell us a little about the emergence of the International Consortium for Advanced Manufacturing Research and how it morphed into BRIDG – Bridging the Innovation Development Gap?

CK: Since launching in 2014, the consortium has provided a platform for advanced manufacturing development to bridge the gap between advanced research at Florida's universities or industry innovators and cost-competitive manufacturing of new products tied to connected devices and the Internet of Things. Originally known as the International Consortium for Advanced Manufacturing Research (ICAMR), we officially rebranded in January 2017 to BRIDG, an acronym that captures the central mission of the innovative technology collective – Bridging the Innovation Development Gap. We believe that this

new name better stands for what we do – connecting researchers and industry to accelerate the development of emerging technologies.

ATJ: Are you saying BRIDG is acting as a brains trust for the academic, R&D and manufacturing worlds?

CK: Yes, via leveraging the connection with academia and industry through the amazing infrastructure that the region has created.

ATJ: Clearly Florida's universities and the Florida High Tech corridor have all played a part in this development.

CK: We are thankful to Osceola County, the University of Central Florida and the Florida High Tech Corridor Council for their visionary leadership and invaluable support.

BRIDG encourages universities within the state to work together. Everything from sports to allocation of state funding has universities competing against each other. BRIDG is giving universities a reason to cooperate. For example, BRIDG is enabling these universities to compete for federal funding where they would not have previously been favourably positioned to compete. For the most part, the capabilities across the universities that BRIDG can help bring to value are very complementary.

ATJ: Your focus is nanotechnology, microelectronics, sensors, fibre optics and photonics. What puts BRIDG ahead of the competition?

CK: The technology capabilities we provide exist within large corporations that manufacture wafers in the multi-thousands, limited to their specific need and accessible only to that company. BRIDG offers state-of-the-art R&D capabilities accessible to academic, industry and government partners for low-quantity production runs used for testing, prototyping and low-volume production within targeted areas of focus.

ATJ: Photographs of your NeoCity facility being built show a power station-like building. What is the rationale for this fortress-like design?

CK: In a word, stability, which is critical when working in such microscopic scale.

ATJ: Clearly minimising vibration and ensuring security were key priorities for the site, how was this achieved?

CK: Hundreds of pylons set the foundation for the building, but the real stable area is the waffle slab on the second floor. To minimise vibration (which can ruin sensor development), 7,000 tons of stone were used for the foundation – drilling down about 40 feet below ground. In addition, the 6-million-pound elevated waffle slab is 3.5 feet thick to support complex research tools with minimal vibration. It required more than nine straight hours to lay the concrete in one continuous pour.

ATJ: I understand this facility cost \$70 million, so you attracted some serious investors. Did that include the US Government?

CK: A visionary partnership at its core, tremendous support and financial commitments has been invested in BRIDG – collectively totalling more than \$200 million to date – from local, state, and federal partners and industry to help support building construction, start-up costs, tools, operations, focused hires and research projects. BRIDG's funding stakeholders include the State of Florida, Osceola County, University of Central Florida, Florida High Tech Corridor Council,

University of Florida, University of South Florida, Florida International University, Harris Corporation, Tupperware, Photon-X and more. We have also been fortunate to receive federal dollars in support of the facility, as well.

ATJ: Is it correct that this is only the third facility of its kind to be built in America?

CK: Only a handful of facilities such as this exist globally. As companies get their products through the development cycle, we provide the infrastructure, such as IP and equipment, needed to test ideas/concepts and serve as the 'bridge' to product commercialisation. Once companies are ready for mass production, that's when they transition to higher-volume production options outside of BRIDG. In a way, we are the state-of-the-art 'boutique' lab/fab facility that is open and flexible enough to keep up with the ever-evolving pace of technology.

ATJ: Do you feel NeoCity has taken a lead on its competitors?

CK: With NeoCity being so new, it provides a clean slate to build a high-tech master campus collectively with creative minds. It is exciting to envision what this can and will grow into over the next several years.

ATJ: These days, smart sensors are in everything. You have said: "Smart sensors will be the dominant product for semiconductor

BRIDG IS WORKING WITH A NUMBER OF COMPANIES ON INTERNET OF THINGS SECURITY PRODUCTS

manufacturing and that the pervasiveness of sensors will be the catalyst for growth and technology advances in nearly all industries". Can you tell us a bit about potential defence and security applications?

CK: Due to existing confidentiality agreements, I am limited on what can be shared. But, it is critical to have integrated software and hardware layered approach to defence and security applications. Cyber security needs to be designed and implemented at the hardware level with the software protective gates and layers designed to be an integral part of the hardware's functionality.

ATJ: It has been estimated that the smart sensor industry could be a \$154 billion industry by 2020. That's just three years away can it really grow that quickly?

CK: There is growing popularity of autonomous vehicles and use of drone devices in consumer space (ie package delivery). Combined with the increasing role of sensor technology opportunities in wearable medical devices, new cases could drive a large proliferative of devices that lead to a huge multi-billion-dollar industry in just a few short years.

ATJ: BRIDG has been seeking US Government Trust Microelectronics Foundry status, what does this entail?

CK: We are evaluating options in partnership with executive departments of the federal government.

ATJ: At what stage are the talks?

CK: Mature discussions centred around options and alternative analysis.

ATJ: What are the pros and cons of accepting this Top Secret status?

CK: Pro – Making it a hub; building synergy amongst industry and creating a critical ecosystem or ‘cluster effect’ of technology across the value chain.

Con – Top secret status can create limits on commercial capabilities with industry. Special efforts and considerations will need to be implemented to reach a successful balance.

ATJ: What is it that BRIDG has to offer the US Department of Defense or Homeland Security?

CK: In addition to BRIDG state-of-the-art facility and technical capabilities, access to land and IP is available.

ATJ: Can you briefly highlight some of

WE PROVIDE THE INFRASTRUCTURE, SUCH AS IP AND EQUIPMENT, NEEDED TO TEST IDEAS

the security and military applications nanotechnology offers the warfighter?

CK: BRIDG is currently working with a number of companies on the development of security products that would be incorporated into Internet of Things devices and thus connected to various networks. Due to existing confidentiality agreements, I am limited on what can be shared.

ATJ: How did BRIDG attract Belgian nanotechnology firm imec to NeoCity and do you think you will attract more European companies?

CK: In July 2016, imec announced the opening of imec Florida to focus on photonics and next-generation electronics Integrated Circuit (IC) design. Imec’s decision to locate its US headquarters here was a result of demonstrated regional and state support,

along with globally recognised strengths in key targeted industries – especially optics and photonics – and access to skilled talent.

I believe accessibility is key to attracting any company to the region – access to talent, access to infrastructure (world-class international airports, multiple seaports, roadways), access to diverse quality of life, etc. We are fortunate to be centrally located in the state, as it provides easy access to an amazing talent pool across all of Florida.

ATJ: Cyber crime is a constant threat to individuals and national infrastructure. What steps can high-tech facilities take to mitigate against the danger?

CK: As with most things in life, we learn from evaluated experience. Until recently, many cyber attacks were not widely reported due to the embarrassment of being hacked.

To date, the response to cyber security attacks has primarily been a software response post breach. To protect our countries and economic infrastructure, cyber security needs to be designed and implemented at the hardware level with the software protective gates and layers designed to be an integral part of the hardware’s functionality.

ATJ: What can be done to reduce and tackle the threat?

CK: Today’s standards for annual audits of public companies must include a cyber-threat vulnerability analysis, and most of the better recognised independent audit organisations have well-versed expertise in these areas. C-suite executives can proactively stay engaged in cyber defence initiatives and be held accountable should cyber security breaches occur.

Some organisations are slow to perform risk assessments due to fear of what they may find – the associated costs of addressing the vulnerabilities are often high. Once an organisation is made aware of a vulnerability, there is an increased pressure to mitigate. Shareholders need to demand greater accountability from executives. Doing nothing is no longer an option ●

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Chester Kennedy and the new high-tech facility

