



Welcome to the Kimmel School of
Construction Management, Engineering and Technology



Center for Integrated Technologies



CENTER FOR INTEGRATED TECHNOLOGIES
RAPID PRODUCT REALIZATION



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The mission of the Center for
Integrated Technologies is to match
the Kimmel School's expertise and
resources to Western North Carolina's
needs
by forming effective partnerships
to grow the region's economy and
to improve the quality of life for its
people.



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The goals of the CIT are:

- Economic Development
and
- Learning Enhancement

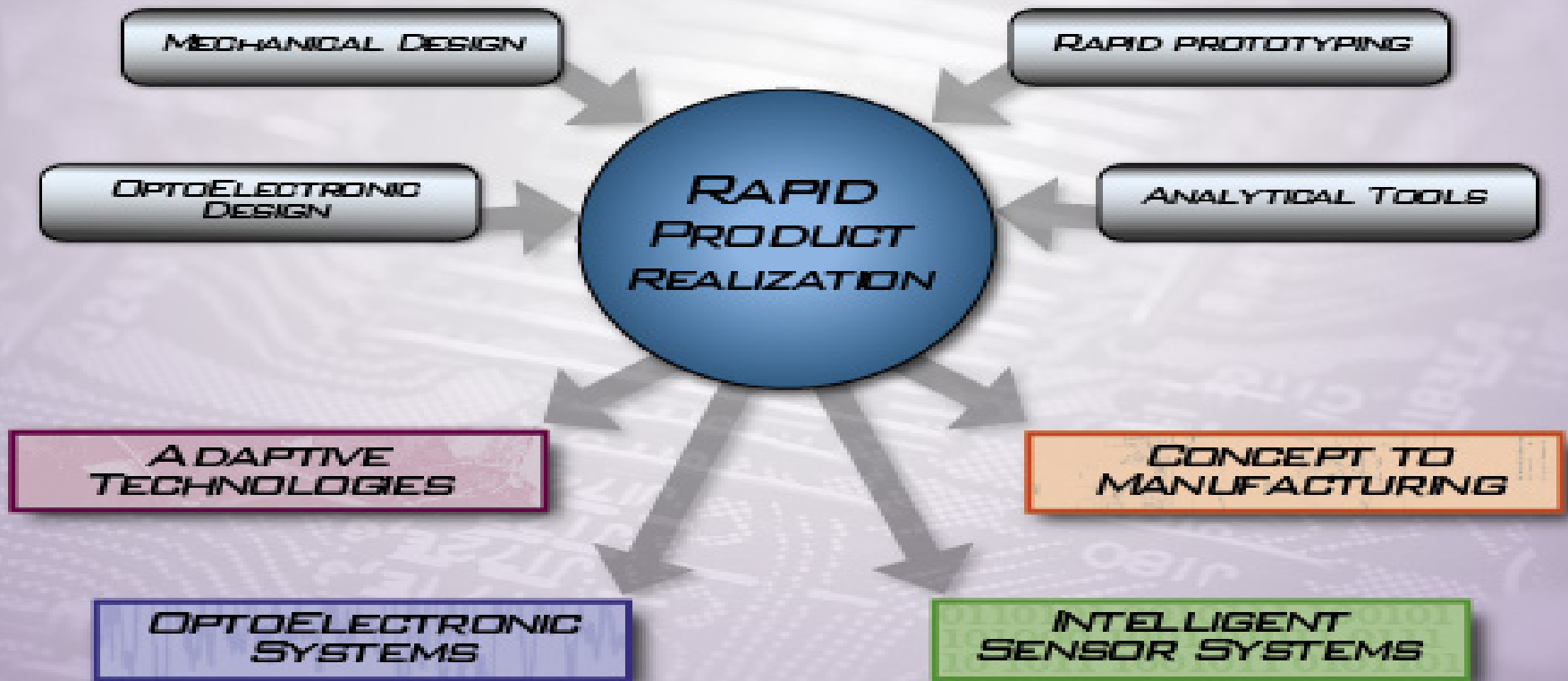
The CIT has already connected with over 80
WNC companies



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OPTOELECTRONIC SYSTEMS



REALIZING YOUR FUTURE

- Analyzing the polarization dependence of optoelectronic devices
- Measuring the spectral characteristics with sub-picometer resolution of tunable lasers
- Testing the bit error ratio at transmission rates up to 12.5 Gb/s

MAKING A DIFFERENCE TO OUR REGION

The Carolina MicroOptics Triangle brings together...

- photonic materials
- component design
- optoelectronic testing and prototyping

CAROLINAS MICROOPTICS TRIANGLE
THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
WESTERN CAROLINA UNIVERSITY
CAMPUS UNIVERSITY



...providing optoelectronic technology for the key markets of the Carolinas

www.carollnasmicrooptictriangle.org/

CONCEPT TO MANUFACTURING



REALIZING YOUR PRODUCT

- Integrating 3D product design, rapid prototyping and testing
- Creating functional prototypes in hours
- Verifying final production dimensions and reverse engineering products with precision metrology
- Scaling up to production with automated processes

MAKING A DIFFERENCE TO BUSINESS

- Added \$2 million of new business to a producer of packaging for holiday products
- Launched a new technology in artificial athletic turf
- Recognized leadership in Innovative Product Development with the Asheville Chamber of Commerce



ADAPTIVE TECHNOLOGIES



REALIZING BETTER LIVING

- Solving the challenges of "aging in place"
- Improving productivity for persons with disabilities
- Enhancing the learning environment of children with disabilities
- Providing home construction with technology that allows "aging in place"

MAKING A DIFFERENCE TO OUR COMMUNITY

- Designed and built a wheelchair collision avoidance sensor system for students with no sight or hearing
- Added hydraulic assist to aid ceramic potters continue their art
- Enhanced the productivity of persons with cerebral palsy
- Received the 2005 Director's Award from the Marketing Association of Rehabilitation Centers for our contribution in creating jobs for 30 persons with disabilities

INTELLIGENT SENSOR SYSTEMS



REALIZING YOUR VISION

- Monitoring visibility and air quality
- Tracking and guiding wheelchair bound people in nursing facilities
- Designing sensor systems with ultra wideband connectivity
- Introducing and developing green construction techniques

MAKING A DIFFERENCE TO OUR ENVIRONMENT

- Developed automated instrumentation stations controlled through the internet
- Controlled unmanned deep sea exploration through the internet
- Created a system of autonomous pods measuring temperature and humidity in Appalachian streams





State of the Art Rapid Prototyping

Stratasys FDM Titan

- polycarbonate, polyphenylsulfone, and ABS plastic.
- Parts up to 400mm x 350mm x 400mm
- Models are produced within an accuracy of $\pm 0.127\text{mm}$



Stratasys Eden 333

- Ultraviolet (UV) acrylic resins in fine layers down to 16 microns.
- Parts up to 340mm x 325mm x 200mm



Zeiss Contura HTG

- Bridge-type coordinate measuring machine (CMM)
- measuring range of 0.7m X axis, 1.0m Y axis, and 0.6m Z axis.
- an accuracy of ± 0.2 microns between 18C – 26C,





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Unique Telecommunication Testing

- Optoelectronics Laboratory
 - Agilent 83453A High Resolution Spectrometer
 - Agilent 81810A Photonic All-parameter Analyzer
 - Agilent 54622D Mixed Signal Oscilloscope
 - Agilent 85024 High Frequency Probe

- Newport RS4000 Vibration isolated optical bench



CENTER FOR INTEGRATED TECHNOLOGIES
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Some Contact Points

- Dr. Phil Sanger – Director
- Dr. Ken Burbank – Senior Faculty Member
- Dr. Brian Howell – Intelligent Sensors
- Dr. James Zhang - Telecommunications
- Mr. Monty Graham – Rapid

Prototyping

- Prof. Chip Ferguson – Parametric

Modeling

