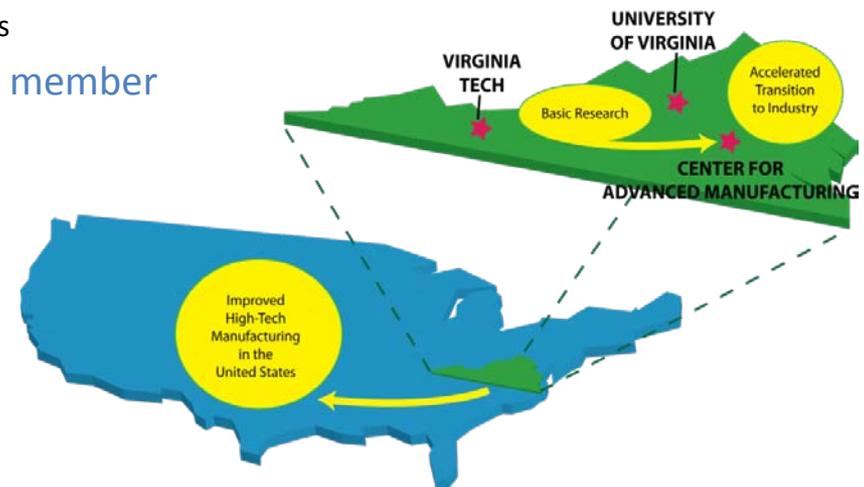
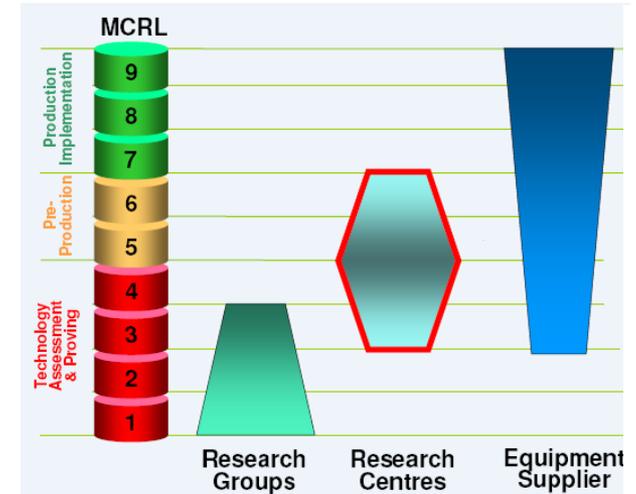


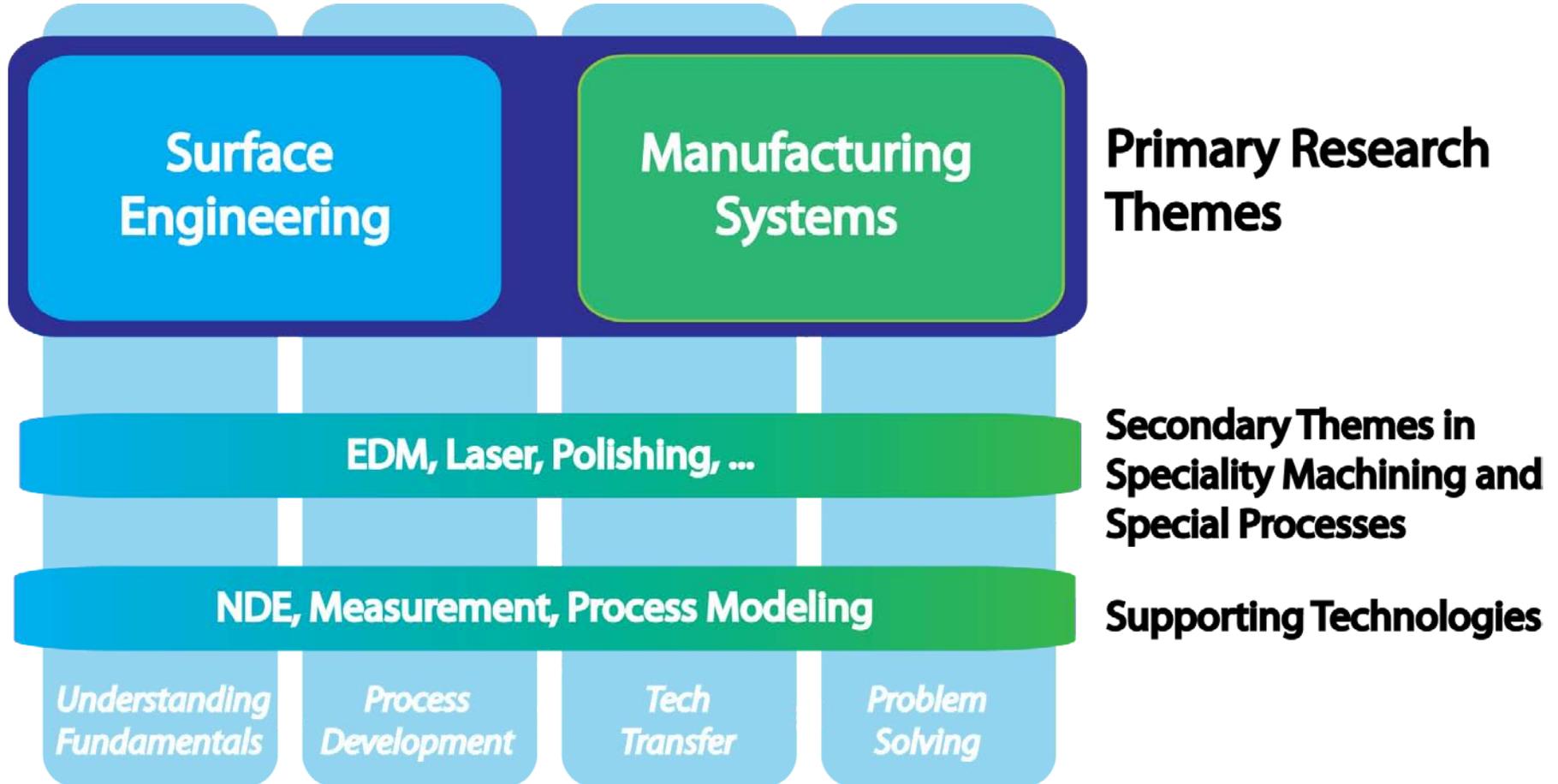


“Improving Competitiveness in a Global Economy”



- Provide transformational improvements in advanced manufacturing technologies
 - Reduce cost
 - Improve quality
 - Reduce time to market
- Bridge the gap between fundamental research and commercialization
 - Accelerate technology into markets
 - Demonstrate technology on real problems
- Foster collaboration among diverse industry sectors
 - Directed Research for the exclusive proprietary benefit of an individual member
 - Generic Research for the benefit of all member companies
- Lower the cost of research and development for member companies
 - Shared facilities and personnel
 - Shared pre-competitive research
- Train the next generation of technology leaders
 - Provide market ready experience to students
 - Connect industry with students





- A global Center of Excellence in advanced manufacturing
 - Creating new technologies
 - Enabling new products
 - Fostering collaboration across industry sectors
- A foundational component of the larger vision for an Advanced Manufacturing Innovation Zone (AMIZ) in Virginia
 - Expanding research capability
 - Workforce training
 - Economic development engine
- CCAM growth in 10 years to:
 - 49 full-time resident PhD-level research staff members
 - 35 graduate research assistants resident at CCAM
 - 35 undergraduate interns resident at CCAM
 - More than 30 Industry Members
 - Sustainable and diversified research portfolio from industry and federal sources totaling more than \$16 million per year



Transportation



Shipbuilding



Energy



Aerospace



Electronics

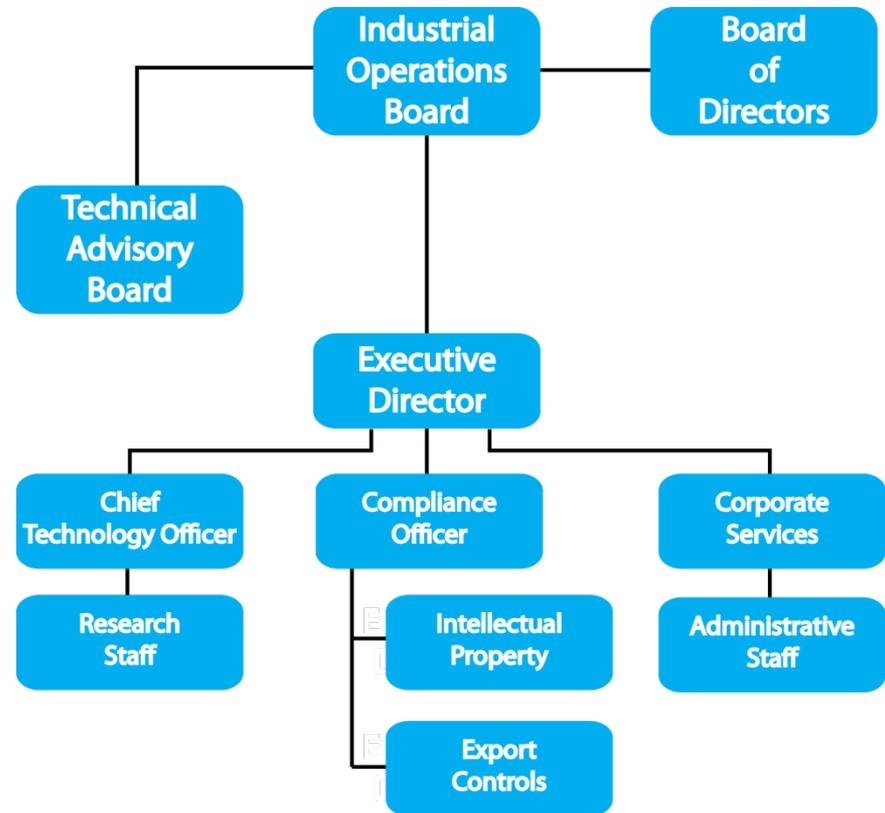


Automotive



Defense

- **Multiple levels of membership**
 - Organizing Industry Members (Limited to 10)
 - Organizing University Members (Limited to 3)
 - Tier 1 Industry Members
 - Tier 2 Industry Members
 - Academic Members
- **Board of Directors**
 - Establishes all policies
 - Approves budgets
 - One member from each Organizing Member
 - Chair of Industrial Operations Board is a member
- **Industrial Operations Board**
 - Provides oversight of day-to-day operations
 - One member from each Tier 1 and Organizing Member
 - One member elected by Tier 2 Members
 - One member from each Organizing University Member
- **Technical Advisory Board**
 - Establishes technology roadmap
 - Creates research agenda
 - One representative from each member organization



- 6 Initial Organizing Industry Members
- 3 Organizing University Members
- Aerojet – first Tier 2 Member
- 2011 Generic Research Workshop Complete
 - 2 days at VSU (May 25 – 26)
 - University theme leads facilitated breakout sessions
 - Technical leads from all companies and universities present ~ 40 attendees
 - 9 Generic Research projects identified
- Formational meetings of Industrial Operations Board and Technical Advisory Council held around Research Workshop
 - Brian Warner (Rolls-Royce) elected as Chairman of the IOB
 - Dave Rickerby (Rolls-Royce) elected as Chairman of the TAC



CHROMALLOY



Newport News Shipbuilding
A Division of Huntington Ingalls Industries

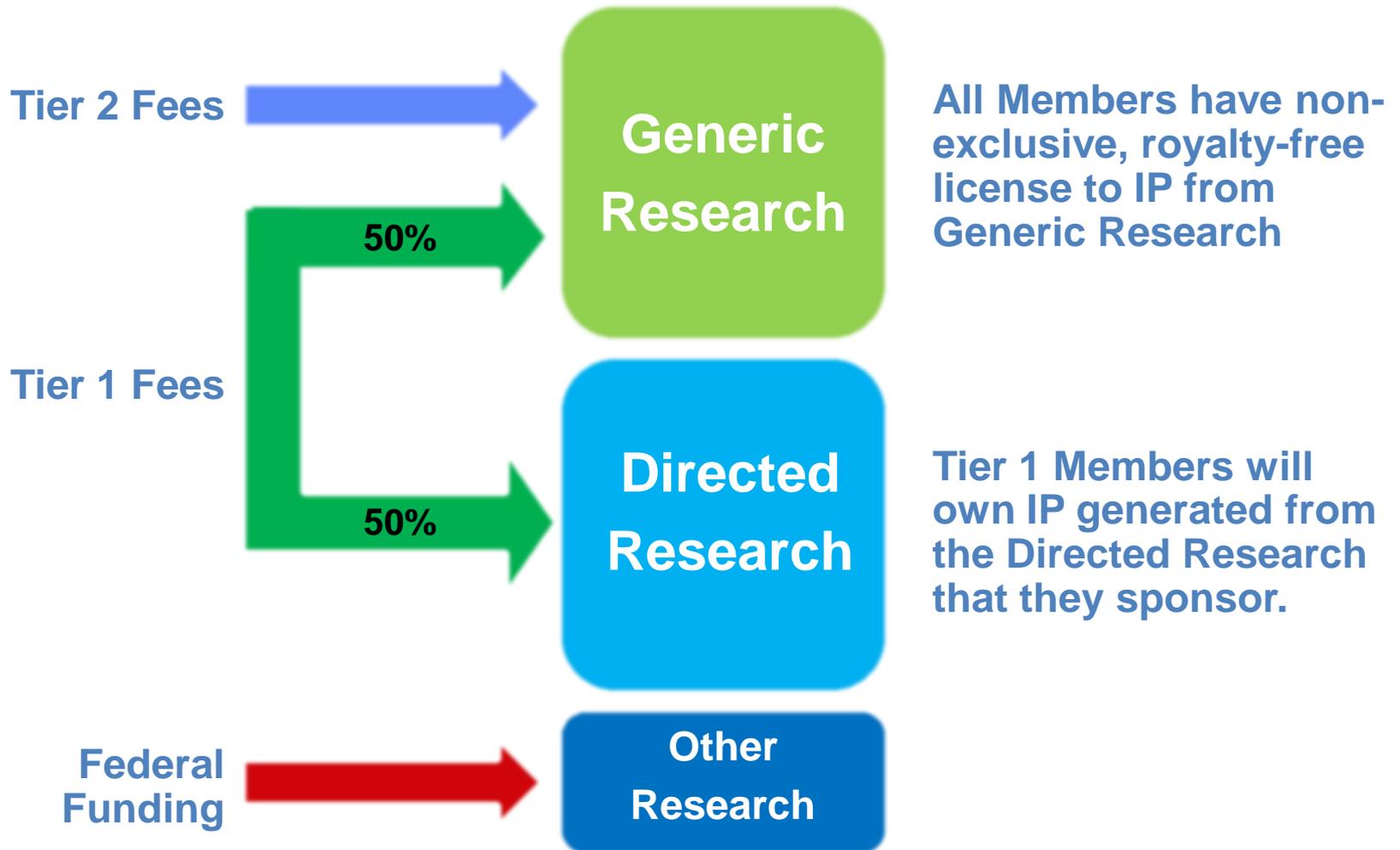


Rolls-Royce



SIEMENS

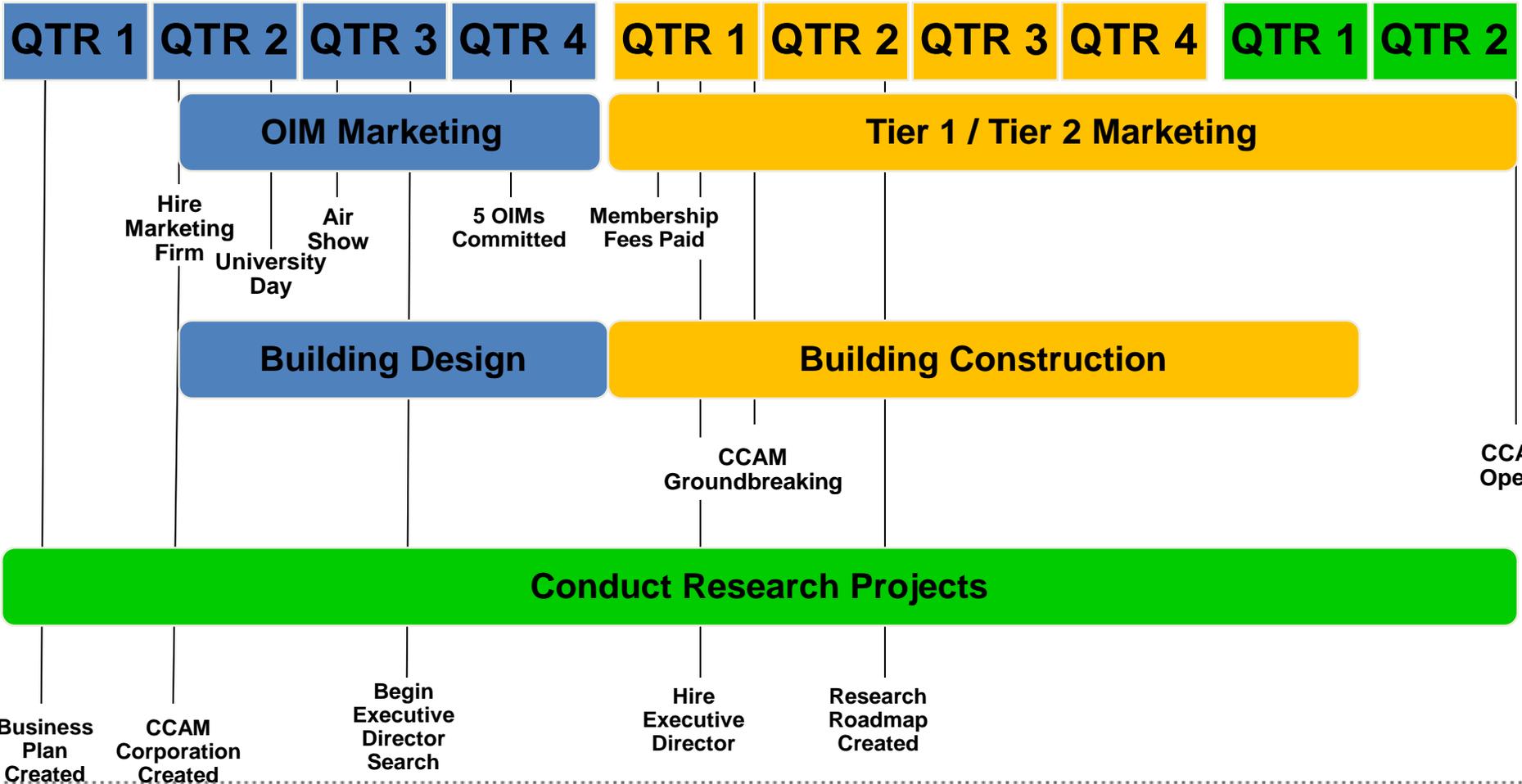




2010

2011

2012





Main Entrance Perspective



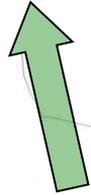
Northeast Perspective



- \$15M Recovery Act Bonds approved by Governor of Virginia and issued by University of Virginia Foundation
 - Interest rate locked in at 3.925%
 - Interest rate swaps used to minimize interest expense during construction
- U. S. Economic Development Administration (EDA)
 - \$3.975M Award Received
- Tobacco Commission
 - Notice of Award for \$4M grant received February 21, 2011
 - \$2.5M for building
 - \$1.5M for Workforce and Economic Development
- Detailed in-kind contributions from Siemens
 - Best competitive price on basic building systems (electrical, fire safety, security, etc.)
 - Gift of systems (such as IT) designed to enhance capabilities
- Current completion date – July/August 2012



Additional
acreage
available



Additional Research Facility

Additional Research Wing

COMMON NAME	BOTANICAL NAME	SIZE	COMMENTS
LARGE TREES			
Redburn Red Maple	<i>Acer rubrum 'Redburn'</i>	2-5' cal	Specimen
American Holly	<i>Ilex opaca</i>	8-10'	Specimen
Green Ash	<i>Fraxinus pennsylvanica</i>	2-5' cal	Specimen
American Beech	<i>Fagus grandifolia</i>	2-5' cal	Specimen
Rice Oak	<i>Quercus palustris</i>	2-5' cal	Specimen
Shortleaf Pine	<i>Pinus echinata</i>	8-10'	Specimen
SMALL TREES			
Cornus Sericeberry	<i>Amelanchier canadensis</i>	10-12'	3 gal max
Red Bud	<i>Cercis canadensis</i>	10-12'	Specimen
Red Birch	<i>Betula nigra</i>	10-12'	2-3 gal max
Bowen Bay Magnolia	<i>Magnolia virginiana</i>	10-12'	3 gal max
Silk Dogwood	<i>Cornus amomum</i>	8-10'	Specimen
SHRUBS			
Black Hawthorn	<i>Viburnum prunifolium</i>	24-30"	install at 24-30 O.C.
Bottlebrush	<i>Cephalanthus occidentalis</i>	24-30"	install at 24-30 O.C.
Tree Jerry Jay	<i>Conocarpus americanus</i>	18-24"	install at 24 O.C.
Mountain Laurel	<i>Kalimeris latifolia</i>	24-30"	install at 24-30 O.C.
Blue Elder Juniper	<i>Juniperus chinensis 'Pfeifferiana' Guada'</i>	24-30"	install at 24-30 O.C.
Spirea	<i>Linnaea borealis</i>	24-30"	install at 24-30 O.C.
Witch hazel	<i>Hamelia virginiana</i>	24-30"	install at 24-30 O.C.
GROUNDCOVER, PERENNIALS & ORNAMENTAL GRASSES			
Big Bluestem	<i>Andropogon gerardii</i>	8" ht. min	12" O.C. transplant spacing
Koeleria Macarthur	<i>Macarthuria tenax 'Sageo'</i>	8" ht. min	12" O.C. transplant spacing
Sham Blue Fescue	<i>Festuca ovina 'Elijah Blue'</i>	8" ht. min	12" O.C. transplant spacing
Pachystima	<i>Pachystima terminalis</i>	8" ht. min	12" O.C. transplant spacing
Liriodie	<i>Liriodie mucronata</i>	8" ht. min	12" O.C. transplant spacing
Black-eyed Susan	<i>Rudbeckia hirta 'Early Bird' Gold</i>	10-12" ht. min	12" O.C. transplant spacing
Hybrid Tall Fescue			Low maintenance turf
Fescue turf			Low maintenance turf

DRY POND PLANTED WITH WATER TOLERANT TREES, SHRUBS AND HERBACEOUS PLANTS. LARGE TREES AT THE PERIMETER TO AID IN REDUCING THE HEAT ISLAND EFFECT ON ADJACENT DRIVES. MAINTAIN EXISTING WOODED AREA AS A BACKDROP TO THE DEVELOPMENT.

LOW EVERGREEN SCREEN HEDGE AT THE VEHICLE DROP-OFF

STONE UNDER BUILDING OVERHANG 8' A MINIMUM AREA FOR ACCENT WITH A DESIGN PATTERN THAT EXPRESSES DIRECTION TO THE BUILDING

Career Center

SMALL ORNAMENTAL FLOWERING TREES PLANTED ALONG THE AXIAL DRIVE. PLACEMENT IS TO BE SIMILAR AS IF THE TREES WERE FOUND IN A NATURAL SETTING.

WALKING PATH TO THE BUILDING WITH A PAVING DESIGN/PATTERN THAT EXPRESSES DIRECTION TO THE BUILDING. NARROW LINEAL SCORING PATTERN TOWARDS THE BUILDING. PAVING MATERIAL TO BE DETERMINED DURING DESIGN DEVELOPMENT.

MAINTAIN EXISTING WOODED AREA AS A BACKDROP TO THE DEVELOPMENT.

INTERNAL ISLAND LANDSCAPE PLANTS SHALL NOT OBSTRUCT THE VIEW TO THE BUILDING. PLANT MATERIALS SHALL CONSIST OF SHRUBS, GRASSES, AND HERBACEOUS PLANTS.

INVERTED INTERNAL PARKING ISLANDS DESIGNED AS BIO-FILTERS WITH WATER TOLERANT PLANT MATERIAL WHERE FEASIBLE.

LAWN AREAS TO BE PLANTED WITH HYBRID TALL FESCUE THAT IS HEAT AND DROUGHT RESISTANT (I.E. FALCON IV TURF) OR EQUAL.

LARGE SHADE TREES TO AIDE IN REDUCING THE HEAT ISLAND EFFECT.

MAINTAIN EXISTING TREES AS A BUFFER ALONG WEST QUAKER ROAD. AMEND THE BUFFER AS NECESSARY.

BERM CONSTRUCTED ADJACENT TO THE SERVICE COURT SCREEN WALL. PLANTED WITH LOW EVERGREEN SHRUBS.

SELECTIVE THINNING OF EXISTING VEGETATION TO OPEN VIEWS OF THE BUILDING FROM THE INTERSECTION.

WEST QUAKER ROAD

- Start date was March 4, 2011
- Previous Experience
 - Vice President and Executive Director, Virginia BioTechnology Research Park, 2000—present
 - Vice President, Biomedical Startup Center, 1998—2000
 - President and CEO, Gyneconcepts, Inc., 1996—1998
 - President and CEO, Medisorb Technologies International, 1993—1996
 - Various engineering and management positions, DuPont, 1972—1993
- Education
 - B.S. in chemical engineering from Virginia Tech
 - MBA from Xavier University



David R. Lohr

Example Faculty Engagement



Haydn Wadley
Thermal Barrier Coatings
Environmental Barrier Coatings



Robert Kelly
Corrosion
Electro-chemical Processes



Randy Cogill
Process Modeling
Optimization and Scheduling



Jamie Camelio
Manufacturing Systems
Manufacturing Processes



Eric Loth
Computational Fluid Dynamics
Nano-textured Coatings



Andres Clarens
Sustainable Manufacturing
Design for Environment



Mool Gupta
Laser Micro-machining
Laser Cleaning



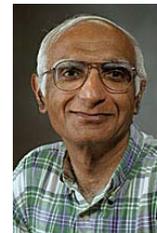
Kimberly Ellis
Manufacturing Systems
Production Planning



Subhash Sarin
Production Scheduling
Manufacturing Systems Control



Don Taylor
Production Systems
Logistics



Romesh Batra
Physics-Based Modeling
Nanomechanics



Gary Pickrell
Process Control Strategies
Ceramic Processing

Questions and Contacts

Barry W. Johnson
Associate Dean

University of Virginia
bwj@virginia.edu

Donald J. Leo
Associate Dean

Virginia Tech
donleo@vt.edu

David R. Lohr
President and
Executive Director

CCAM
David.Lohr@ccam-va.com