
**PRESENTATION
TO THE
2005 JCOTS NANOTECHNOLOGY
ADVISORY COMMITTEE:
Nanomanufacturing Education in
Southside Virginia**

Presenters

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Richmond, Virginia

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Southside Opportunity

The vision of **Luna Innovations Danville** is to be the leading manufacturer of cost-effective, carbonaceous nanomaterials supporting today's government and commercial nanotechnology research and applications.

This project has started the transformation of the Southside economy promoting a high-technology image for the region with “new economy” jobs.

The Problem

- ◆ Limited carbonaceous nanomaterial quantities for R&D
- ◆ High material cost prevents widespread development
- ◆ Current nanomanufacturing techniques are immature
- ◆ Southside economy experiencing high unemployment

The Solution

- ◆ Produce large quantities of carbonaceous nanomaterials
- ◆ Establish price points that allow for widespread development of material
- ◆ Support nanomaterial manufacturing R&D
- ◆ Establish a 24,000 ft² production facility in Danville
- ◆ **Develop a workforce specifically for nanotechnology manufacturing**

Nanomanufacturing Perspective

“There is broad acknowledgement of two challenges facing the progress of nanotechnology: one is the need to cost effectively manufacture large volumes of nanomaterials and the second is the **need to develop a trained nanomanufacturing workforce.**”

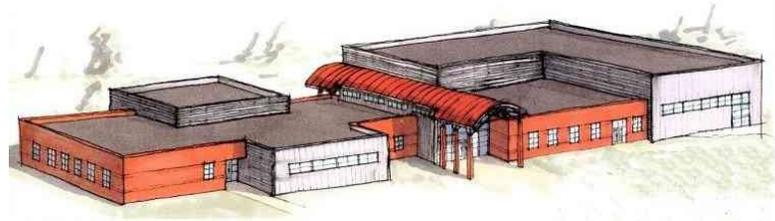
Peter Jobse, President, CIT

Nanotechnology – A Commonwealth Perspective

April 20, 2004

Danville – *Going forward*

- ◆ Vision and action focused on the future
 - Public-private partnership
 - Regional partnership
- ◆ Dan River Business Development Center & SBDC
- ◆ Connectivity: e-Dan, MAN, RBI
- ◆ NASA – SATS & MACA
- ◆ Investments in human capacity development
 - Galileo School – NASA & VT
- ◆ The Cyber Park
 - Institute for Advanced Learning & Research (VT, Averett, DCC)
 - *Research Addition*
 - Danville Community College's Regional Center for Advanced Technology and Training (RCATT)
- ◆ QOL Improvements
- ◆ MEGA Site
- ◆ Flexible & Responsive



Danville Community College Case Study

Past History

“Economic development experts cite an even-widening “skills gap” between job requirements and educational levels; this gap may be especially evident in Southside, where a smaller percentage of the population completes high school or pursues higher education. Recognizing that efforts to close this gap must necessarily address the appropriate roles and responsibilities of educators, students, parents, workers, and private business, the Task Force examined initiatives that seek increased accountability for public education and enhanced coordination between the public and private sectors.” (A.L. Philpott Southside Economic Commission [HJR 300] Report, 1992, p. 7).

VIRGINIA'S COMMUNITY COLLEGES RESPOND TO SOUTHSIDE'S ECONOMIC DEVELOPMENT AND WORKFORCE PREPARATION NEEDS

**SOUTHSIDE
VIRGINIA**



CURRENT SITUATION

Challenges

- ◆ Tobacco
- ◆ Textiles
- ◆ Digital Divide Gap
- ◆ Sobering Demographics
- ◆ Low Educational Attainment Levels

Opportunities

- ◆ Tobacco Indemnification and Community Revitalization Commission
- ◆ Manufacturing Culture
- ◆ Work Ethic
- ◆ Economic Diversification Through Private Sector and Higher Education Partnerships

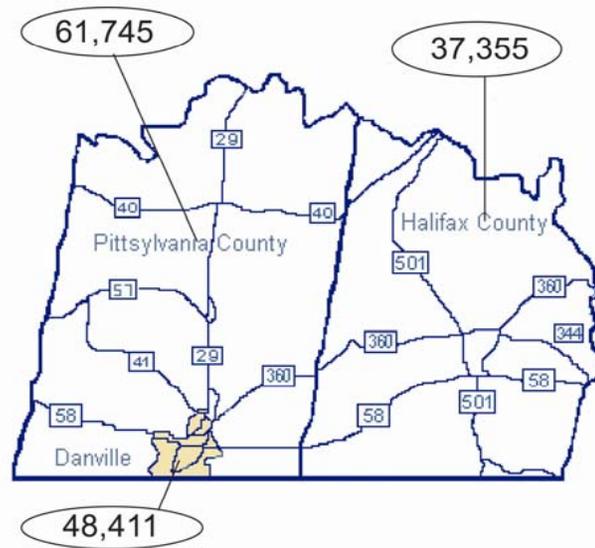
DCC's Response

RESPONSES TO PRIVATE SECTOR PARTNERS IN THE REGION'S ECONOMIC TRANSFORMATION

DCC's Response (cont)

- ◆ **Expanding Access**
 - K-20 Partnerships
 - Outreach
- ◆ **Strengthening the Workforce**
 - Degrees, certificates, diplomas
 - Customized training
 - Placement Services
- ◆ **Assisting with Economic Development**
 - Meet with prospects
 - Data to Economic Development Councils
 - Maintenance Technicians (Goodyear, *et.al.*)
 - Polymer/Plastics (Essel-Propack)
 - Information Technology Institute
- ◆ **Partnering in Community Development**
 - Neighborhood Educational Opportunity Centers

DANVILLE COMMUNITY COLLEGE SERVICE REGION



Population of Danville: 48,411
Population of Pittsylvania County: 61,745
Population of Halifax County: 37,355
Total Population of Service Region: 145,511

Source: 2000 Census, U.S. Census Bureau

Goodyear Maintenance Coop Program

◆ WHAT IS IT?

- Technical skills program
- Three part process:
 - Classroom, Lab & Skill Simulation
 - CD-ROM CBT (computer based training)
 - Structured Plant Site OJT
- Target Plants: Danville, Topeka, & Union City

Goodyear Maintenance Coop Program (cont)

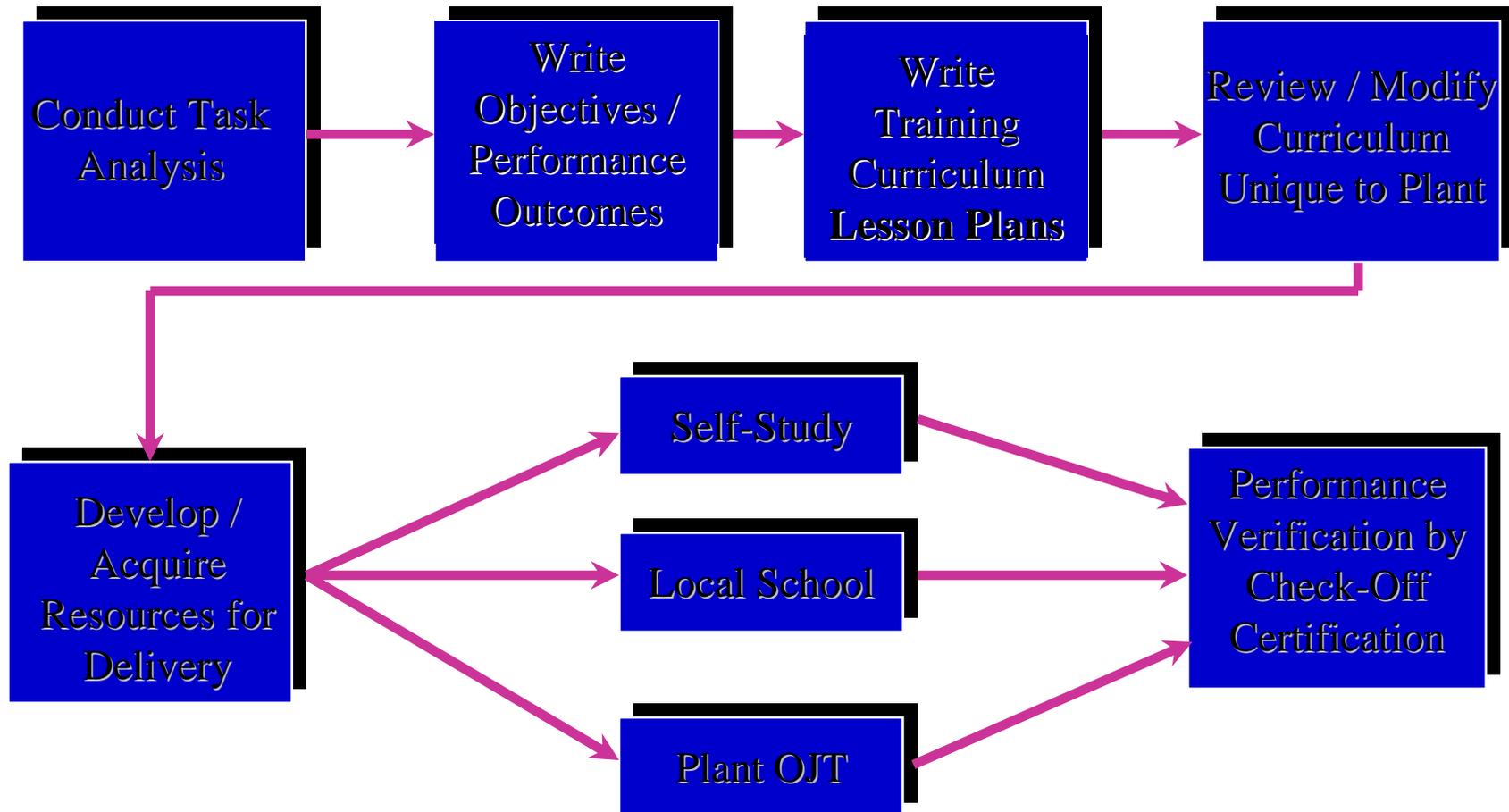
- ◆ **Three phases:**
 - **Common-Pool Competencies**
 - **Craft specific**
 - **Machine specific**
- **Program duration is < 24 months**
- **Performance based**
- **Future Plants: Huntsville - Decatur
Fayetteville, & Napanee**

Coop Goals

- ◆ **Train new competent skilled technicians to maintain the equipment in Goodyear plants.**
- ◆ **To remedy the technician shortage created by plant attrition and the lack of skilled technicians in the labor market.**
- ◆ **Enhance technical competency of incumbent skilled craft-persons.**
- ◆ **Improve the quality of products and the efficiency of manufacturing processes.**

NUTS & BOLTS

Co-op Training Process



NUTS & BOLTS (cont)

Pre-Delivery Steps

- ◆ Lesson Plan (LP) Development
 - Provided Consistent Delivery
 - Over 6,000 hours to develop
- ◆ Combining LP's into Credit Coursework
 - Utilized existing prefixes
 - Used 195 & 295 (Topics in ...) option

NUTS & BOLTS (cont)

Delivery

- ◆ Classroom Instruction Utilizing Modular Lesson Plans (with cognitive examination)
- ◆ Simulator Training Utilizing Amatrol Trainers (with performance evaluation)
- ◆ Structured OJT (with in-plant evaluation)

RESULTS

- ◆ 86 College Credits in Phase I
- ◆ 46-51 College Credits in Phase II
- ◆ Statewide Awards (DCC):
 - Exemplary Business & Industry Program in Virginia
(Virginia Department of Education)
 - Outstanding Business & Industry Partnership
(Virginia Community College System)

Questions?



SLS Video
