

Frank Murray

Vice President

Product Development North America

Georgia-Pacific Corporation

Panel

**Improving Industrial Performance with
Academic Research**

Pulp & Paper Industrial Performance

- ROTC < Cost of Capital for last 30 years.
- Average ROTC has declined from 8% in 1975 to 4.5 % in 2003.
- 2003 capital spending at 50% of depreciation.
- Industry spends < 1% of sales in R&D.
- POSSIBLE CONCLUSION:

✓ *Past practices of research, and investment need re-thinking.*

Personal Observations (not GP's)

■ Four areas of R & D work

Category II: Known Unknowns

**Adjacent/incremental
product development**

Category I: Known

**Technical support for the
existing/every-day business**

Category III: Unknown Unknowns

The “Discovery Zone”

Category II: Known Unknowns

**Adjacent/incremental
process development**

Personal Observations

- Most companies handle category I and II technical development activities internally.
 - ✓ *internal or contract laboratory capability*
 - ✓ *specific, focused project research*
- Category III is where companies need help.
 - ✓ *New visions, and break-through technologies*
 - ✓ *issues too big for a single organization*
 - scale too big, time-frame too long, multiplicity of required skills too broad.

Personal Observations

- Facilitators of discovery
 - ✓ *academic-Industry forums & publications*
 - ✓ *Cross discipline and unique capabilities within academic institutions*
- Impediments to co-operative research
 - ✓ *lack of agreement on critical issues*
 - among industry participants & institutions
 - general risk aversion around “tough unknowns”
 - ✓ *mis-alignment of “I. P. ownership” rights*
 - industry share-holders vs. public interest
 - ✓ *different time-line perspectives (industry vs academic)*
 - ✓ *emerging shortage of researchers and engineers*