Increasing ROI for Research Projects

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OHIO DEPARTMENT OF TRANSPORTATION
Mission

**ODOT Mission:**

To provide easy conveyance of people and goods from place to place, we will:
- Take care of what we have;
- Make our system work better;
- Improve safety;
- Enhance capacity.

**Research Mission:**

ODOT research invests in innovative research that develops, maintains and assists Ohio in establishing a world class transportation system.
What is Research ROI

ROI = Return on Investment

ROI is the benefit to the investor resulting from an investment of some resource. ~ Wikipedia

Research ROI

✓ comparing the project/program benefits to our investments
✓ increasing ROI drives our research program decisions
Investment - Financial

- Dedicated research funding - doesn’t compete with capital projects
- $6 million/year of federal funds - usually matched by 20% state funds

<table>
<thead>
<tr>
<th>Year</th>
<th>Contracts ($000’s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>$5,513</td>
</tr>
<tr>
<td>2014</td>
<td>$7,990</td>
</tr>
<tr>
<td>2013</td>
<td>$7,849</td>
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<table>
<thead>
<tr>
<th>Non-Projects</th>
<th>Amount ($000’s)</th>
</tr>
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<tbody>
<tr>
<td>LTAP</td>
<td>$480</td>
</tr>
<tr>
<td>NCHRP</td>
<td>$350</td>
</tr>
<tr>
<td>TRB</td>
<td>$208</td>
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</tbody>
</table>
Investment - Other

Opportunity Costs

- Technical expertise – county managers, HT’s, hydraulics, safety, etc.
- OSCOR – thirteen members who review & recommend
- Administrative process – contract, invoices, Controlling Board
- Research staff time – project management
Benefits to ODOT

Many types of impacts are valuable:

- Productivity
- Cost savings
- Knowledge Enhancement
- Development
- Collaboration
- Policies and specifications
Benefits – Productivity

- Evaluation of Pavement Performance on DEL-23 (SJN: 14768)
  - 25% productivity increase: using a new software application

- Summer Ecology of Indiana Bats in Ohio (SJN: 134387)
  - 20% time savings: reducing mitigation administrative processing

- Evaluation of Cone Penetrometer Testing (CPT) for use with Transportation Projects (SJN: 134371)
  - 75% time savings: using new method to complete drilling on applicable projects – also 64% cheaper than traditional drilling
Benefits – Cost Savings

- Evaluation of Pavement Performance on DEL-23 (SJN: 14768)
  - $22 million: policy change discontinuing the use of free draining bases saved materials cost by converting to a more effective and less expensive base material

- Effectiveness of Noise Barriers Installed Adjacent to Transverse Groove Concrete Pavement (SJN: 134365)
  - $4.5 million: creating alternative surface treatment in lieu of building noise walls resulting in a ROI of 2,315%.

- Verification of ODOT’s Load Rating Analysis Programs for Metal Pipe and Arch Culverts (SJN: 134225)
  - $0.2 million: eliminating unnecessary load ratings on buried structures with fill between 6.5 and 8 feet
Benefits – Knowledge Enhancement

- **Effectiveness of Chip Sealing and Micro Surfacing on Pavement Serviceability and Life (SJN: 134299)**
  - Provided the foundation for modifying ODOT’s chip sealing and microsurfacing procedures and enhanced ODOT’s knowledge.

- **Effectiveness of Noise Barriers Installed Adjacent to Transverse Groove Concrete Pavement (SJN: 134365)**
  - Demonstrated that transverse grooved pavement could be diamond grinded then re-grooved longitudinally in order to diminish noise.
  - Provided a lower cost solution for noise abatement in lieu of the installation of a traditional noise wall.

- **Evaluation of Cone Penetrometer Testing (CPT) for use with Transportation Projects (SJN: 134371)**
  - The impact expanding overseas as the DIGGS schema is poised to become a recognized international standard for geotechnical and geoenvironmental data.
Benefits – Development

- 43 projects provided financial support to 69 students.

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Number of Projects</th>
<th>Number of Students</th>
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<tr>
<td>Pavement</td>
<td>19</td>
<td>28</td>
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<tr>
<td>Environmental</td>
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<td>7</td>
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<td>13</td>
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<tr>
<td>Structural</td>
<td>11</td>
<td>21</td>
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Benefits – Collaboration

Projects fostered collaboration amongst many different organizations encompassing academia, industry, and private sector consultants.

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Benefits – Policies and Specifications

- Impacted 26 ODOT policies, procedures and specifications.
- Two environmental projects (SJN: 134465 & 134387)
  - Improved ODOT’s relationship with other state and federal agencies.
  - Produced the leverage needed to impact regulatory policies/procedures directly impacting ODOT’s environmental and construction practices.
- Three geotechnical projects
  - Improved ODOT’s processes for addressing various geotechnical hazards.
  - Provided foundation for work associated with embankments (SJN 134319), drilled shafts (SJN: 134238), and rock slope design (SJN: 134325).
How to Increase the ROI

$R = Q \times A$

Results are driven by the quality of the solution AND the acceptance.

Defining the two levers:

**Quality** – the work is professional, accurate and can help ODOT make decisions

**Acceptance** – the work is understood and used by ODOT in making decisions
How to Improve Results - Before

QUALITY

Write a clear RFP
Define the need not the solution

ACCEPTANCE

Include holistic perspectives on the project team
How to Improve Results - During

**QUALITY**
- Select proposal for best expected value
- Project management
  - Scope
  - Communication
  - Schedule

**ACCEPTANCE**
- Communication
  - Technical Liaisons
  - Researchers
- Define deliverables
  - Stakeholders
  - Format
  - Detail
## How to Improve Results - After

### QUALITY
- Technical Liaison review
- Clear and Concise
- Visual supported by narrative
- Technical Editing

### ACCEPTANCE
- Publishing to stakeholders
- Communicate Implementation
- Implementation projects
Questions?
Thank you!

Contact us:
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