Today’s Presenters

• **Moderator**
  Ms. Enid White, Wyoming Department of Transportation

• **Overview and the Basics in Intellectual Property Management Strategy**
  Dr. Joe Bradley, University of Illinois, Urbana-Champaign

• **Case Studies of Applied Intellectual Property Management**
  Dr. Timothy Wyatt, Conner Gwyn Schenck PLLC
Today’s Presenters

• Required Expertise in Managing Intellectual Property
  Dr. Jagannath Mallela, WSP | Parson Brinckerhoff

• Lessons Learned and Challenges for State Departments of Transportation
  Mr. David Huft, South Dakota Department of Transportation
NCHRP is...

A state-driven national program

- The state DOTs, through AASHTO’s Standing Committee on Research...
  - Are core sponsors of NCHRP
  - Suggest research topics and select final projects
  - Help select investigators and guide their work through oversight panels
NCHRP delivers...

Practical, ready-to-use results

- Applied research aimed at state DOT practitioners
- Often become AASHTO standards, specifications, guides, manuals
- Can be directly applied across the spectrum of highway concerns: planning, design, construction, operation, maintenance, safety
A range of approaches and products

- Traditional NCHRP reports
- Syntheses of highway practice
- IDEA Program
- Domestic Scan Program
- Quick-Response Research for AASHTO
- Other products to foster implementation:
  - Research Results Digests
  - Legal Research Digests
  - Web-Only Documents and CD-ROMs
NCHRP Webinar Series

- Part of TRB’s larger webinar program
- Opportunity to interact with investigators and apply research findings.
Today’s First Presenter

• Overview and the Basics in Intellectual Property Management Strategy
  Dr. Joe Bradley, University of Illinois, Urbana-Champaign
Today’s First Presenter

• Overview and the Basics in Intellectual Property Management Strategy
Dr. Joe Bradley, University of Illinois, Urbana-Champaign
Research Results and Highlights

• IP Management is important, not considered mission-critical

• Why should this be important to state transportation agencies?
Research Results and Highlights

State Transportation Agencies IP Activity

- 25 patents
- 213 live trademarks
- 66 registered copyrights
Research Results and Highlights

• IP management targeted for specific units or organizational-wide
  - i.e., research
• The approach was to create a “generalist” view to IP management
Intellectual Property Management Overview
Overview of IP Management

• What constitutes IP?

• Why is recognizing potential IP important?
Overview of IP Management

**Intellectual Capital**
- Experience
- Know-How
- Skills
- Creativity
- Corporate Memory

**Intellectual Assets**
- Software
- Logos
- Methods
- Machines
- Service Marks

**Intellectual Property**
- Trade Secrets
- Patents
- Copyrights
- Trademarks

Sullivan and Edvinsson, 1996
# Overview of IP Management

<table>
<thead>
<tr>
<th>Research</th>
<th>Materials</th>
<th>Legal</th>
<th>Transit</th>
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<tbody>
<tr>
<td>- Method of testing <em>(patent)</em>&lt;br&gt;- Products or devices <em>(patent)</em>&lt;br&gt;- Treatise <em>(copyright)</em></td>
<td>- Method of testing <em>(patent)</em>&lt;br&gt;- Products or devices <em>(patent)</em></td>
<td>- Slogans <em>(trademark)</em>&lt;br&gt;- Databases <em>(copyright)</em>&lt;br&gt;- Arrangements of facts <em>(copyright)</em>&lt;br&gt;- Logo <em>(trademark)</em></td>
<td>- Names of products and services <em>(trademark)</em></td>
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<thead>
<tr>
<th>Safety</th>
<th>Traffic</th>
<th>Motor Vehicles</th>
<th>Design</th>
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</thead>
<tbody>
<tr>
<td>- Cartoon characters <em>(copyright)</em>&lt;br&gt;- Public service announcements (PSAs) <em>(copyright)</em>&lt;br&gt;- Training materials <em>(copyright)</em></td>
<td>- Databases <em>(copyright)</em>&lt;br&gt;- Slogans <em>(trademark)</em>&lt;br&gt;- Software titles <em>(trademark)</em></td>
<td>- Software with algorithms <em>(patent)</em>&lt;br&gt;- Databases <em>(copyright)</em></td>
<td>- Architectural drawings <em>(copyright)</em></td>
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<tr>
<th>Construction</th>
<th>Maintenance</th>
<th>Operations</th>
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<tbody>
<tr>
<td>- Engineering designs/plans <em>(copyright)</em>&lt;br&gt;- Products or devices <em>(patent)</em>&lt;br&gt;- Blueprints <em>(copyright)</em>&lt;br&gt;- Method of testing <em>(patent)</em></td>
<td>- Products or devices <em>(patent)</em>&lt;br&gt;- Training material <em>(copyright)</em></td>
<td>- Training material <em>(copyright)</em></td>
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Basics of Intellectual Property
Basics of Intellectual Property

- Intellectual property refers to:
  - the creative activities of literary, artistic, and scientific works, performances of performing artist, and broadcasts;
  - inventions in all fields of human endeavor;
  - scientific discoveries;
  - industrial design;
  - trademarks, service marks, and commercial names,

(World Intellectual Property Organization (WIPO), 1967, Article 2)
Basics of Intellectual Property

• Types of IP protection
  - Patent
  - Copyright
  - Trademark
  - Trade secret
What is a Patent?

- Property right
- Granted by the government
- Rights to inventor to excluded others from:
  - Making, using, offering for sale, selling, or importing invention
- Category of patents
  - Utility, Design, Plant
Examples of Patentable Inventions

- Machines
- Processes
- Methods
- Compositions of matter
- Articles of manufacture
What is a Copyright?

• A limited or mini-monopoly right
• Original work of authorship
• Fixed in a tangible or permanent means of expression
• No registration requirement to lay claim to copyright authorship
Rights Afforded by Copyright Protection

• To reproduce the work

• To distribute the work to the public

• To prepare derivative works

• To perform the work publicly

• To display the work publicly

• To digitally perform the work
Copyrightable Works

- Articles, novels, works of nonfiction
- Training materials
- Public service announcements
- Building and Engineering documents
- State maps
- Architectural works
- Software
What is a Trademark?

- Source identifier for a product and/or service
- Could be a word, phrase, symbol, design, or combination of such
- Distinguish the source of goods of one party from another
Examples of Trademark

• *Don't mess with Texas®*
What is a Trade Secret

• Confidential information that confers economic advantage

• Value is derived from its secrecy
What is a Trade Secret

• Mark as “secret,” “restricted,” “confidential,” or any word or phrase that signals privacy

• Keep locked in a secure place or restricted area, by physical or digital means

• Dispose of in a very controlled manner
# Potential IP for State DOTs

<table>
<thead>
<tr>
<th>Types of IP Protection</th>
<th>Categories of Inventions/Creations</th>
<th>Potential Examples at a State DOT</th>
<th>Rationale for Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patent</td>
<td>Products, Devices, Software, Test methods</td>
<td>Dealing systems, Work zone protection systems, AASHTOWare (software)</td>
<td>Restrict the rights of other to use, sell, make, or import the claimed invention. Encourage investment and innovation in a particular area.</td>
</tr>
<tr>
<td>Copyright</td>
<td>Software, Documents, Training materials, Reports, Photographs, Websites, Jingles, State maps</td>
<td>State DOT websites, AASHTOWare, State maps created by state DOTs, ASTM Test Standards, AASHTO bridge pavement and highway design documents</td>
<td>Control access to creative expression. Exclude others from reproducing, adapting, distributing, performing, or displaying a creative work.</td>
</tr>
<tr>
<td>Trademark</td>
<td>Logos, Acronyms, Symbols, Slogans</td>
<td>Slogans (e.g., Texas DOT’s anti-litter campaign’s “Don’t Mess with Texas”), or the national seatbelt enforcement campaign’s “Click it or Ticket”), AASHTOWare</td>
<td>Signal the level of quality of a creation. Protect public from being misled by similar products.</td>
</tr>
<tr>
<td>Trade secret</td>
<td>Products for which the value is based on the secrecy of the information</td>
<td>Methods and procedures for managing snow-covered roads</td>
<td>Necessary when the secrecy of information makes it valuable</td>
</tr>
</tbody>
</table>

**NCHRP REPORT 799**

Management Guide to Intellectual Property for State Departments of Transportation
Developing an IP Management Process
IP Management

• What is intellectual property management?
• What does it entail?
• Is it really that important?
• Can we define a tractable approach?
  - More of a framework less of a recipe?
Definition of IP Management

Realizing value through strategic and tactical options embedded in intellectual property rights (IPRs)
Definition of IP Rights

IPR refers to the legally binding rights given to person(s) in regards to their creation. The creator is typically given an exclusive right over the use of his/her creation for a certain period of time or indefinitely.

The use of these rights by others must be authorized by the creator or any other owner of those rights.
Importance of IP Management

- Maintain access to research results from funded activities
- Protect interest and IP of others
- Reduce likelihood of IP infringement claims
- Identify and track contributions to the field by DOTs
Importance of IP Management

- Source for potential licensing opportunities
- Legally protect a presence in the market space
- Support and encourage investments in development and commercialization
- Avoid becoming “captive” by proprietary technology
Importance of IP Management

• Financial investments and numerous projects and activities that may create intellectual property

• Maximizing taxpayer value - the return on taxpayer dollars.

• Management of “all” resources
Importance of IP Management

• Guidance to employees, contractors, and consultants on issues of IP management.
Risk if Not Managed

- Inappropriate or unauthorized use of state DOT intellectual assets
- Liability if unknowingly using others’ IP without consent (e.g., a state DOT employee using copyrighted material found on the web)
- A third party laying claim to IP that has been developed using state DOT funding
Techniques in IP Management
Common Approach

• Establishing a mission and rationale for IP management
• Designation of a person, group, or unit with IP responsibility
• The implementation of a formal process
• Assessment of processes and outcomes
IP Management Framework

**Legal**
- IP Law
- IP Ownership
- IP Use
- Nature/Type of IP
- License Negotiation
- License Compliance
- Disclosures

**Technical**
- IP Readiness Level
- IP Screening
- Field of Application
- Technology/Service Type
- IP Category
- Market Area

**Organizational**
- Education
- Training
- Reward System
- Mission/Objectives
- Purpose

**Economical**
- IP Maintenance
- IP Life-Cycle Cost
- Commercialization
- Royalties
- Reward System
- Licensing
Structured Process in IP Management
## Training in IP Management

<table>
<thead>
<tr>
<th>Personnel Groups</th>
<th>Training Focus</th>
</tr>
</thead>
</table>
| Researchers, Scientists                  | ▪ Organizational IP policy guidelines and procedures  
▪ Importance of confidentiality, non-enabling descriptions of inventions  
▪ Basics of IP agreements relating to research  
▪ Basics on the forms of IP protection  
▪ Submitting disclosures to IPM office/personnel |
| Operations Personnel (Finance, Human Resources, Legal) | ▪ IP royalty management and accounting  
▪ Conflicts of interest  
▪ Basics on the forms of IP protection  
▪ IP contracts and agreements  
▪ Mediation, arbitration, litigation, and negotiation in IP |
| Intellectual Property Managers           | ▪ IP contracts and agreements  
▪ Depth knowledge on the forms of IP protection  
▪ Reviewing technology disclosures  
▪ IP negotiations and marketing  
▪ IP licensing |
| Other Personnel                          | ▪ Disclosures and confidentiality  
▪ Basics on the forms of IP protection  
▪ IP guidelines and procedures |
| Research Managers/Directors              | ▪ Basics on the forms of IP protection  
▪ Implementing IP policy and procedures  
▪ Benefits of proactive IPM  
▪ Investment requirement for IPM |
| Executive Directors                      | ▪ IP policy  
▪ Investment requirement for IPM  
▪ Benefits of proactive IPM  
▪ IPM risks |
IP Management - Cost of Implementation

- Dependent on the size and complexity of the IP management effort
- A review of universities and some public organizations
  - staff ranging from 10 to 25 individuals
  - annual budget from $100,000 - $10 million.
- Most expenditures are for:
  - Operational cost
  - Salaries/Benefits
  - IP fees
  - Outside counsel
  - Marketing
  - Licensing
Contract Services in IP Management

- Some state transportation agencies may decide to outsource management activities and responsibilities

- Considerations in outsourcing for services:
  - Contractor capability and reputation
  - Contractor core competencies
  - Contractor IPM experiences
  - Contractor services offerings
## Contract Services in IP Management

<table>
<thead>
<tr>
<th>Decision Factor</th>
<th>Definition</th>
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<tr>
<td>Contractor capability and reputation</td>
<td>- Need a firm that understands the transportation sector and the key factors of effective IPM</td>
</tr>
<tr>
<td>Contractor core competencies</td>
<td>- Identify the areas in which the firm has experience. Is there experience and know-how in patents, copyrights, or trademarks?</td>
</tr>
<tr>
<td></td>
<td>- What are the key technical areas of competency (materials, electronics, wireless, sensors etc.)?</td>
</tr>
<tr>
<td>Contractor IPM experiences</td>
<td>- What processes and procedures are in place to support the numerous IPM tasks?</td>
</tr>
<tr>
<td>Contractor service offerings</td>
<td>- Does the contractor offer IPM training?</td>
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<tr>
<td></td>
<td>- Is the contractor only an IP broker, or does this organizational also engage in product/service development using third-party IP?</td>
</tr>
<tr>
<td></td>
<td>- Does the contractor provide sublicensing services?</td>
</tr>
<tr>
<td></td>
<td>- Do we understand the business model of the contractor?</td>
</tr>
<tr>
<td></td>
<td>- Does the contractor offer IP policing and monitoring services?</td>
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Potential Next Steps
Next Steps

- Review the guidebook – NCHRP Report 799

- Select a unit/department for a pilot study

- Implement some parts of the framework and processes (not a requirement to implement all at once)
Next Steps

• Measure the outcome of whichever IP management tactics the organization has implemented

• Continue to implement more components of the guide as necessary
• Legal Case Studies of Applied Intellectual Property Management

Timothy R. Wyatt
Conner Gwyn Schenck PLLC
Greensboro, North Carolina
IP Management Situations Faced by State DOTs

- Need to use pre-existing intellectual property of others in furtherance of State DOT contracts
- Intellectual property developed under contract to State DOTs or by State DOT employees

Always ask: What is the role of federal funding?
Pre-Existing, Proprietary Intellectual Property of Others

- State DOTs are immune from suit for patent / copyright infringement
  - Patent / copyright infringement cases can only be brought in federal court
  - State governments have immunity from suit for damages in federal court (11th Amendment)
Jacobs Wind Elec. Co. v. Florida DOT

919 F.2d 726 (Fed. Cir. 1990)

- Florida DOT installed tidal flow system in culverts on the Courtney Campbell Causeway
- Patent holder claimed infringement
Jacobs Wind Elec. Co. v. Florida DOT
919 F.2d 726 (Fed. Cir. 1990)

• Federal Circuit Court of Appeals:
  - State DOTs are immune from suit for patent infringement
• As a result of Jacobs Wind, Congress attempted to abrogate State immunity for patent infringement
• U.S. Supreme Court invalidated the legislation, upholding State sovereign immunity
Sovereign Immunity is Not a License to Infringe

- State DOTs may still be liable for claims by IP owners under state law (takings, conversion)
  - *Jacobs Wind v. Florida DOT*, 626 So.2d 1333 (Fla. 1993)

- Contractors for State DOTs are liable for IP infringement on behalf of State DOTs
  - *State Contracting v. Florida*, 258 F.3d 1329 (Fed. Cir. 2001)

- FHWA prohibits use of federal funds for the premium or royalty associated with proprietary IP
  - 23 C.F.R. § 635.411
Georgia Stabilized Earth Wall: Alternative to Using Proprietary IP

- Georgia DOT developed alternative retaining wall (GASE) to counter the proprietary RECO system
  - Did not patent the system, but made it available to contractors
- Patent infringement lawsuit threatened, but RECO settled for royalty of $1/ft² of GASE wall
  - Resulted in more competition, significantly lower prices for embankment walls
IP Developed Under Contract to State DOTs

• Do not presume that the State DOT automatically takes rights in the IP
  - Contract for a license, at minimum
  - Require disclosure of inventions, and be conscious of patent filing deadlines

• If FHWA funds are involved, the federal government automatically takes a license
  - But the State DOT can not use the federal license
State Contracting & Engineering v. Florida

258 F.3d 1329 (Fed. Cir. 2001)

- Contractor to Florida DOT developed integrated pile/column for sound barrier walls
  - Value engineering change proposal subject to a “rights in data” clause
State Contracting & Engineering v. Florida
258 F.3d 1329 (Fed. Cir. 2001)

- Federal Circuit Court of Appeals:
  - “Rights in Data” clause did not convey patent rights to FDOT
  - FDOT’s contractors could be sued for patent infringement

- FDOT ultimately agreed to pay $8M for past infringement, plus royalties for future use, for an invention that it had funded
  - State Contracting v. Condotte America, 197 F. App’x 915 (Fed. Cir. 2006)
Trinity Industries v. Road Systems


- University developed guardrail terminals under contract to TxDOT (using FHWA funds)
- After obtaining patent, sued competing manufacturers of guardrail terminals for infringement
Trinity Industries v. Road Systems


• U.S. District Court for the Eastern Dist. of Texas:
  - University was a “federal subcontractor” for purposes of the Bayh-Dole Act
  - Federal government took an automatic license in the patented invention

• Consistent with FHWA’s longstanding position:
  - 23 C.F.R. § 420.121(j)
  - State DOTs need to proactively contract for a license to use the inventions of their contractors

http://www.fhwa.dot.gov/hep/guidance/sprpat.cfm
Additional IP Case Studies for State DOTs

- NCHRP Report 799
  - Management Guide to IP for State DOTs
- Forthcoming NCHRP Legal Research Digest:
  - Primer on Patentability and Use of Ideas Developed by Contractors Performing Work for State and Federal Transportation and Local Planning Agencies

Required Expertise in Managing Intellectual Property

Dr. Jagannath Mallela, WSP | Parson Brinckerhoff
IP Management Expertise Areas

- Intellectual property is a resource that should be managed
- Best practice suggests a number of expertise areas are critical to success
IP Management Expertise Areas

- Inventors and creators
- Legal experts
- Technology development and commercialization experts
- Business and marketing expertise
- Policy makers
IP Management Expertise Areas

• Develop systems that incentivize creativity and technology commercialization

• Make decisions regarding developing these expertise internally or to hire new talent

• Establish agency-wide policy regarding IP
IP Management Expertise Areas

- Support from leadership is key

- Cross- and multi-functional input is critical across the agency units

- Support a culture of IP management and expertise development
IP Management Expertise Areas

- Intellectual Property Policy
- Executive Director
- Transportation Unit or Division
  - Disclosure (Invention, Documents, Logo etc.)
  - IP Management Oversight Unit/Personnel
    - Screening and Analysis
    - Legal Review
      - Pursue Protection or Other Alternatives
      - IP Revenue Management
      - Measure and Assess IP Management Efforts

- Inventors, Creators
- Policy Makers
- Tech commercialization, Business and Finance
- Legal
## Objectives & Concerns

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<thead>
<tr>
<th><strong>Objectives</strong></th>
<th><strong>Concerns</strong></th>
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<tbody>
<tr>
<td>Equity</td>
<td>Publication</td>
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<tr>
<td>Advancement of technology</td>
<td>License to use</td>
</tr>
<tr>
<td>Return on investment</td>
<td>Royalties</td>
</tr>
<tr>
<td>Incentive to innovators (1980 Bayh-Dole Act)</td>
<td>Infringement</td>
</tr>
<tr>
<td>Self-defense</td>
<td>Pre-existing technology</td>
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<td>Negotiations</td>
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<td></td>
<td>Academic freedom</td>
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</table>
Publication Concerns

**During research**
- Who reviews?
- Must researchers obey review comments?
- Is approval needed to publish or present?
- Are disclaimers required?
- Must sponsors be acknowledged?
- Is work properly attributed?

**Post-research**
- Same questions!!
Data Concerns

Ownership
- During research?
- After research?
- With state?
- With contractor?
- Jointly?

Confidentiality
- Prior Art
- New Knowledge

Privacy
- Drivers Privacy Protection Act
- Health Privacy Protection Act
- Employee Surveys
- Longitudinal surveys
Invention Concerns

Regarding Employees

- Inventor rights
  - Patents are granted to individuals
  - Are employees required to assign to employer?
  - Royalty share
- Confidentiality
- Infringement
- Formal or informal arrangements in place?

Regarding Contractors

- Confidentiality
- Equity to subordinates
  - Subcontractors
  - Employees
  - Students
- Responsible attribution
- IP competence
IP Management Challenges

- IP law complex and foreign to DOTs
  - executives
  - researchers
  - practitioners
  - legal staff
  - legislators
  - your contractors

- “Standard” contract provisions inadequate

- Patent system broken
  - Inadequate application review
  - Unoriginal, overbroad, vague, unclear patents
  - Defer to courts

- Expensive
  - $20K patent
  - $200K reexamination
  - $2M lawsuit
  - “Might makes right”
Games People Play

**Trade Secrets**
- Not disclosed in patents
- Essential to commercialization
- But...IP is at risk

**Disclosure Level**
- Patent requires disclosure of essential detail
- But...disclosing too much can jeopardize future patents

**IP Harvesting “Trolls”**
- Business is obtaining patent protection for others’ unprotected intellectual property
Unique State Issues

Immunity from Infringement
- Interpretation of 11th Amendment exempts state
- Does not apply to federal government
- Does not apply to states’ suppliers & contractors
- States may intentionally or accidentally waive immunity

Open Records Laws
- May limit confidentiality
- Vary among states
- Possible requirements for federally-funded work

Philosophical Preference for Public Domain
- Sharing ideas considered a virtue
- but publically funded ≠ public domain
# Case Study: Winter Maintenance Decision Support System

## Background
- Multi-state pooled fund study
- Big project ~$8M
- Created science and software
- USPTO awarded patent for MDSS to 3rd party
- 3rd party filed suit against PFS contractor
- Contractor signed license agreement with fees to 3rd party

## Lessons Learned
- Monitor patent activities of others
- Do not assume USPTO does comprehensive application review
- Challenge is expensive
- Technical details and publication dates critical
What Can We Do?

Corporately
- Maintain dialog
- Share experience, effective practices
- Train (NCHRP 20-89+)
- Engage transportation legal community
- Develop mechanisms for collaborative IP management

Individually
- Do not ignore this topic!
- Act ethically
- Define Intellectual Property policies, in consideration of:
  - State DOT policies
  - State rules and regulations
  - Federal rules and regulations
- Retain patent counsel
What Can We Do?

Research Projects
- Build IP into project management scheme
- Consider IP early
  - Contractor stance?
  - Existing IP?
  - Likelihood of invention?
- Establish sound contract language and IP Agreements
- Work with Contractor

IP Agreements
- Rights
  - Use
  - Share
  - Modify
- Obligations
- Process
- Duration
- Costs
- Royalties
- Transfer
- Escrow
Questions?

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