RECLAMATION

Managing Water in the West

Technology Transfer

Department of the Interior
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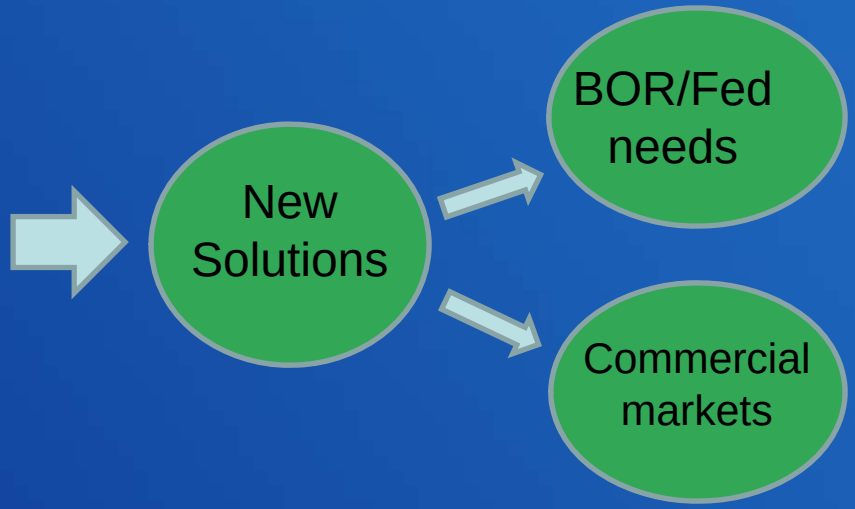
U.S. Department of the Interior
Bureau of Reclamation

Technology Transfer Authorities

Fed Push **Industry Pull**

Technology Transfer Agreements



- Authorizes feds to join forces with the private sector to create, mature, develop, or test new solutions that are aligned with Reclamation's mission objectives.

- Protect, manage, and/or license associated federal and non-federal intellectual property and confidential information, as needed, in mutually beneficial ways.

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761 DM 1 – Technology Transfer (TT) Agreements

Primary Elements of BOR implementing Directive & Standards

Channel Industry-relevant R&D into capability and cost-shared TT agreements early in the R&D process

Maximize the benefits that TT agreements can provide to BOR, BOR stakeholders,, the American public, and the national economy.

Establish strategic patent decision criteria that has BOR pursuing patent protection only when it will maximize the BOR and public-good “problem solving” impact that the new technology can offer

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TT Agreements – Benefits to Reclamation

1. Industry can share research costs, and bring their expertise to the overall research effort.
2. Industry know-how can help expedite and guide the lab-to-market research process.
3. Industry is at the table and able to advise on the need to patent intellectual property in the U.S. and other countries.
4. The industry partner is authorized to assume the burden, responsibility, and cost to file and maintain patents jointly developed with Reclamation inventors.
5. The industry partner is authorized to expeditiously license any patents developed under a technology transfer authorized agreements that are owned-or co-owned by Reclamation.
6. The industry partner provides a ready-made reliable manufacturer for products needed by Reclamation.
7. For discoveries and information made under a technology transfer authorized agreement, Reclamation can offer the industry partner trade secret protection for up to 5 years to help the industry partner assume the financial risks of scale-up and manufacturing costs. In certain situations, limited trade secret protection is a more expeditious alternative to speed innovations from the lab to a market-ready status than seeking patent protection.

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761 DM 1 – Technology Transfer (TT) Agreements
Primary Elements of BOR implementing Directive & Standards

Reclamation Patent Decision Criteria

1. An industry-manufactured product is the optimal way to serve Reclamation's needs, and the needs of other non-federal user communities.

and…

2. Industry must make substantial front-end investments to mature the invention, obtain regulatory approvals, and/or to tool up to manufacture a market-ready product.

and….

3. A substantial commercial market exists.

Note: See "low-value" patent discussion in the Nov 2014 Congressional Budget Office report on Federal Policies and Innovation

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Case History - Foul Release Coating Material Transfer Agreements (MTA)

BOR Objective:

Find a coating that prevents mussel attachment (aka “Foul Release”)

MTA Partner BOR Objective:

Learn if their experimental coating can prevent mussel attachment in an open water operational setting.

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Case History - Foul Release Coating Material Transfer Agreements (MTA)

BOR and Partner Contributions

Early Stage R& D

Not Part of Agreement

Manufacturing Know-How

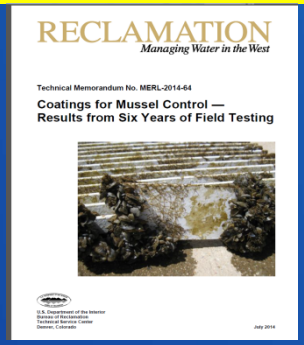
Not Part of Agreement

Field Testing

Partner coating sample
BOR facilities
BOR facility operators
BOR tech experts
BOR test results

Solution

Mixed Results



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Case History - Foul Release Coating Material Transfer Agreements (MTA)

Results:

Some demonstrate foul release properties…but are they durable, scalable, affordable, compatible with existing manufacturing processes?

FujiFilm Hunt Smart Surfaces of North America and BOR enter into a CRADA to further pursue.

Reaching out to a university that has a promising coating formulation as a potential 3rd CRADA party

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Case History - Foul Release Coating Material Transfer Agreements (MTA)

Lessons Learned working with 7 Different MTA partners

- Include full disclosure in MTA that BOR may also engage in R&D, in partnership with others, to develop experimental coating formulations that may compete with MTA partner experimental formulations
- State in MTA that BOR will not reverse engineer any experimental coating submitted under the MTA and will only conduct the tests defined in the MTA.
- State BOR will publish test results and that the partner name is considerable FOIAable. BOR does not want to burden ourselves with protecting test results, and wants to minimize “confidential information: liability exposure to our employees.

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CRADA Case History - FujiFilm Hunt Smart Surfaces of North America

BOR Objectives

Commercially available, durable, affordable coating that prevents mussel attachment in fresh-water applications.

FujiFilm Hunt-Smart Surfaces of North America Objectives

Commercially available, durable, affordable coating that prevents mussel attachment in fresh-water applications (aligns with BOR objective).

Plus marine applications

Plus prevent icing on airplanes and wind turbines

Plus other applications

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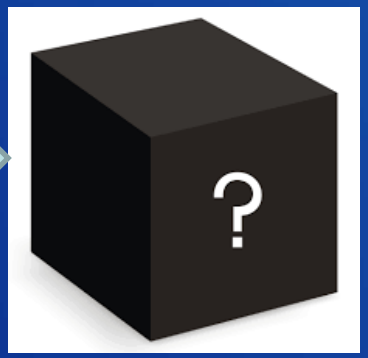
CRADA Case History - FujiFilm Hunt Smart Surfaces, LLC

Early Stage R& D

BOR and Fuji tech experts jointly developing new chemical formulations

Manufacturing Know-How



Fuji Facilities and Know-How

Field Testing

BOR Dams and Facility Operators and Tech Experts

Solution

Good Progress

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CRADA Case History - FujiFilm Hunt Smart Surfaces, LLC

Lessons Learned

1. Fuji's Big Fear: Exposure of their IP and Know-how to Fed staff and FOIA, and poor demonstration by federal agencies to protect information (i.e. Edward Snowden)

2. Fuji lawyers serious about coming after any blabber mouth fed employees.

CRADA Case History - FujiFilm Hunt Smart Surfaces, LLC

Lessons Learned

Trade Secrets Act (18 U.S.C. 1905) places all liability and responsibility on employee…not agency

Adequate training and strategies do not seem to exist to manage this exposure

3. The CRADA Fix:

- Agreed in the CRADA to not share existing Know-how or Trade Secrets…but establish a well defined process for doing so if necessary….that protects federal employees from personal liability
- Epiphany - Fuji and BOR both realize we can do a whole lot of good stuff together without exchanging know-how. Became somewhat of a moot point.

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CRADA Case History - FujiFilm Hunt Smart Surfaces, LLC

Lessons Learned (cont)

4. BOR and Fuji Tech Experts are much more efficient as joint research team than either party going at this alone

5. Very efficient to get BOR and Industry capabilities (Fed Push and Industry Pull) aligned early in the R&D process

6. Fuji considers patents the last resort to protect IP that comes out of CRADA

Patent process has become messy, complex, labor and time intensive, and USPTO will publish patents to the entire world.

7. Fuji prefers the option to treat CRADA information as trade secret for up to 5 years. That's all they need to recover their R&D investment and get a jump start on the market. Fuji still willing to share financial rewards with BOR co-inventors if there is a way outside of patent royalty fees. QUESTION: How can we do that ??

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CRADA Case History
Marrone Bio Innovations

BOR and Partner Contributions

Early Stage R& D

Manufacturing Know-How

Field Testing

Solution

BOR Tech Experts
- Marrone Tech Experts
- Marrone IP
- Marrone Pays BOR $ for Tech Experts

Marrone know-how
Marrone regulatory process

BOR facilities
BOR facility operators
Marrone and BOR tech experts

ZEQUANOX®
Invasive Mussel Control

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CRADA Case History
Marrone Bio Innovations

Lessons Learned

CRADAs are also an effective means to accelerate the maturation and commercialization of private sector intellectual property into manufactured products that Reclamation and others can use.

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CRADA Case History with Desalination Membrane Company

BOR Objectives

Decrease the cost of desalination so that desalination is a more viable, affordable options to create new water sources

Develop next generation desalination membrane that tackles a significant system cost and reliability obstacle that currently limits existing “industry standard” membranes

Industry Partner Objectives

Same as BOR

Plus other applications for the magical chemical formulation

Profits and continue as a world-wide leader in desalination membrane manufacturing

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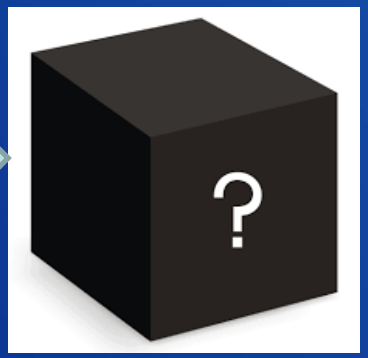
CRADA Case History with Desalination Membrane Company

Early Stage R& D

BOR Developed new chemical formulations (patented and patent pending)

Manufacturing Know-How



Partner Facilities and Know-How transform the chemical formulation into a membrane

Lab and Field Testing

- Jointly develop test plan
- BOR and Partner conduct lab tests
- BOR conducts full-scale pilot tests.
- BOR facility operators + joint team of tech experts

Solution

Good Progress

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CRADA Case History with Desalination Membrane Company

Lessons Learned

Don’t need to share IP and know-how to effectively work on research.

Aligning industry technical experts and know-how with our tech experts produces very efficient beginning- to-end research teams

Manufacturing know-how are vital to successful outcomes. CRADAs allow this know-how to be incorporated into the CRADA scope-of-work, but does not require CRADA partner disclose such know-how.

Industry not necessarily interested in IP until they know that it will work at a manufacturing scale and at the same or lower cost than current industry standard.

Industry does not necessarily need an exclusive license to IP because their competitive advantage is often their know-how.

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Other CRADA Lessons Learned

Clearly define key expectations up front and make sure CRADA partner understands terms…such as:

- A funded CRADA (partner provides funds to agency) does not mean BOR will buy or endorse the resulting solution.
- A funded CRADA does not give partner special access to agency procurement process.

- Legal definition of CRADA Information and Protected CRADA Information is important to distinguish the types of information that can be protected and under what circumstances. CRADA Info "may" be protected at agency discretion in accordance with the 15 USC 3710a(c)(7)(B). …make sure this discretion (i.e."may") is clearly in the CRADA terms. Define a process on how the CRADA partner requests that CRADA information be protected.

- BOR starts each CRADA negotiation as a No-Funds "CRADA" and prefers to do as much as a the CRADA team can do with each partner funding their own participation. Avoids the perception (or actual intent) that either party is trying to buy, sell, or influence anything.

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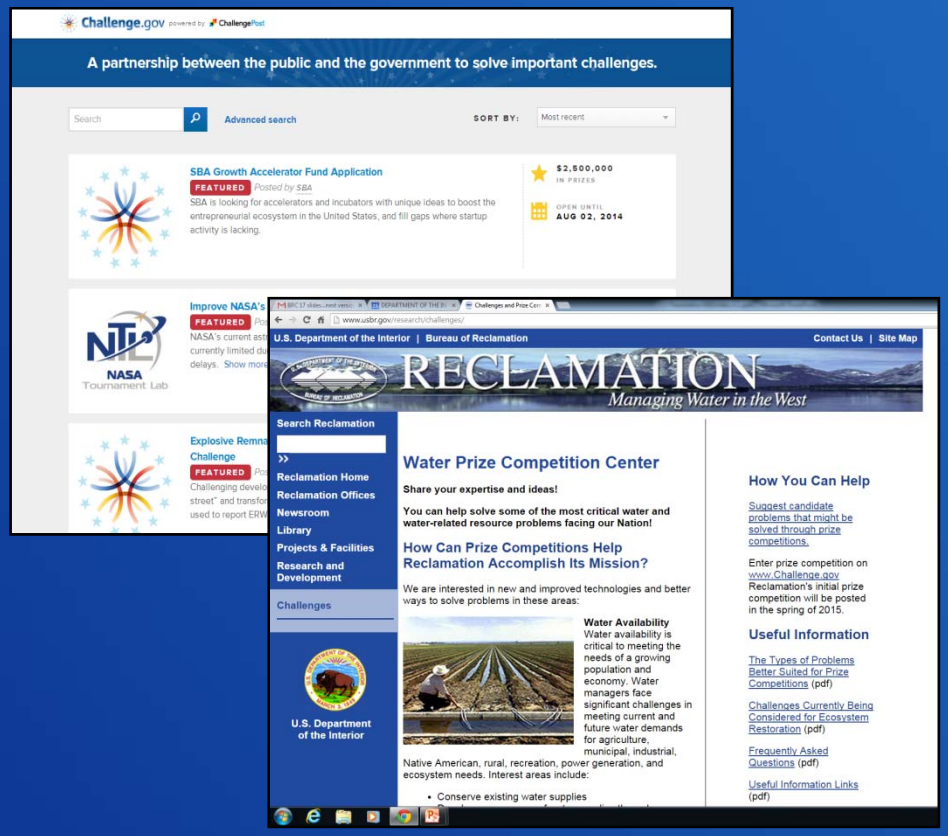
Technology Prize Competitions

Overview:

- Engage U.S. citizens and private sector to solve some of the most critical mission problems.
- Engage with Reclamation Regions, and Federal Community in design and sponsoring of competitions.
- *Initial Competitions scheduled for Spring/Summer 2015.*

Water Prize Competition Center

- Water Availability
- Aquatic Ecosystem Restoration
- Infrastructure Sustainability



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