

how does nature do it?

CBBG

Center for Bio-mediated & Bio-inspired Geotechnics



The Role of the IAB

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Role of the IAB

Primarily concerned with providing direction for Center research and education programs.

- Provide perspective into the **critical needs** of industry and practitioners.

Provide input on-

- Research priorities
- Technology demonstrations
- Technology-to-market business planning.

Role of the IAB

Responsibilities include:

Annual and midyear review of current projects (tech., pract.)

Guidance regarding these projects (crit. needs?)

- Informs our internal reviews

Review & input on new, annual projects

- which ones should be awarded?

Annual SWOT

Role of the IAB . . . Getting into the weeds

Role of the IAB is fairly clear, **but not so simple in practice.**

To understand this, check the composition of the IAB (**17 Industry Partners**) and highly diverse nature of the Center:

- *Geotech and contractors* → ground improvement
- *Geoenvironmental* → soil and water remediation
- *Consultants* → ground improvement, remediation, exotic/complex projects
- *Owners/operators* → landfill, mining, oil & gas, slag/metals, utilities
- *Agencies* → State DOT, State Environmental

Industry Partners



Industry partners have very different types/ranges of expertise

Industry-specific concerns favor certain research areas/projects

Diverse nature of CBBG covers wide range of projects and research

25 projects covering 6 research areas!

1. Lifecycle analysis
2. Bio-cementation/solidification
3. Fluid flow/Transport
4. Microbial processes
5. Environmental/Landfills
6. Infrastructure



- Enzyme induced carbonate precipitation
- Liquefaction mitigation via microbial denitr.
- Electro-kinetics
- Annelid Inspired Geo-probe
- Microbial processes in extreme env.
- Tree/plant root inspired foundations

Breadth of technical content is outside capabilities of any single

Role of the IAB . . . A practical approach

Only 4 projects per industry partner → they choose projects

- Typically follow their “favorites” anyway
- Provide deeper technical and value input

“Orphan” and low-count projects are politely “assigned”

- Relevant expertise is a limiting factor
- Encouraged to comment on potential value to (other?) industry(s)

Role of the IAB . . . A practical approach

Projects closest to field testing/application receive value input

- Not necessarily same as the “technical” favorites
- Input typically involves costs and lifecycle considerations
 - follow-ups!
- A great tool to solicit direct industry support!

Ultimately, you must know your industry partners . . .

strengths, interests and capabilities (time, staff, etc.)

Role of the IAB . . . the Annual SWOT

A similar logic applies to gather details for SWOT

But, SWOT requires **holistic approach**

- Individual, sub-group technical interests become secondary
- Intra-industry competition and secrecy is not a concern
- Cross-industry perspective in the context of the Center mission
 - Develop innovative technologies to serve civil engineering industry
 - Educate & train future engineers in the field of Biogeotechnics

This is where IAB group work happens over partner interests

Role of the IAB . . . Education

This is where IAB group work is seen again

Open, positive discussions about multidisciplinary education program and student activities

Plenty willing to speak with students

- Individually, sub-groups/specialty areas and via webinar

General perception that students are well-prepared and ready to hire

- Several hires and internships by industry partners

Thank You

Questions?