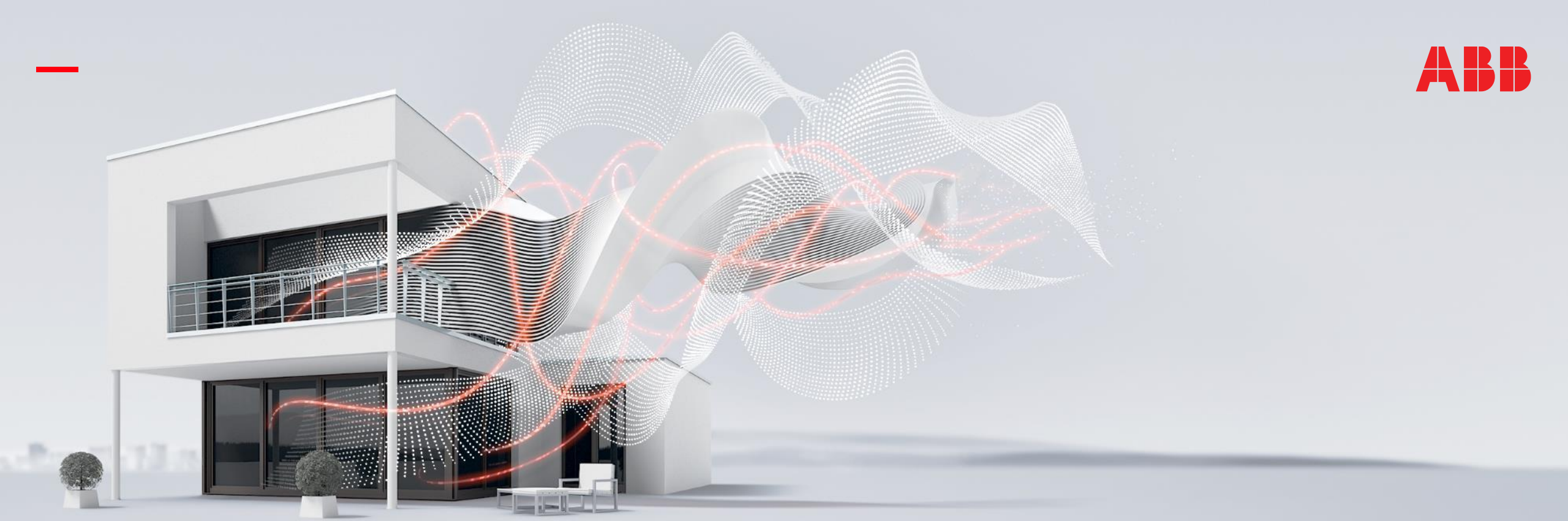


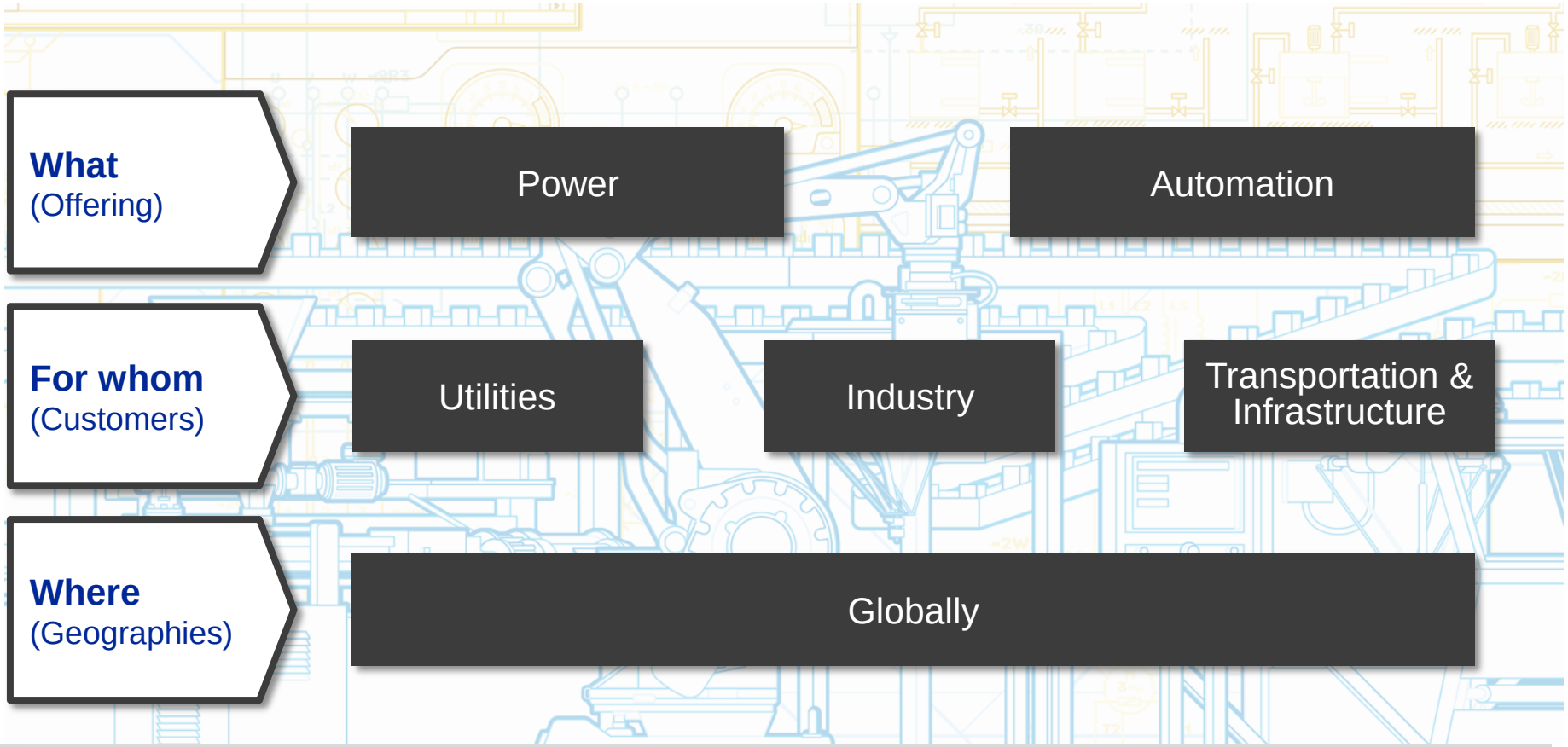
MAY 22ND, 2017

University Relations: Collaboration Models

National Academies Panel on Graduate Education

Le Tang, Ph.D., Vice President of ABB Inc. and Head of US Corporate Research Center (USCRC)

ABB in simple terms



$42bn revenue	100 countries	~150,000 employees	Single "A" credit rating	HQ Zurich	Listings	Zurich SIX	New York NYSE	Stockholm Nasdaq OMX

Note 2013 figures

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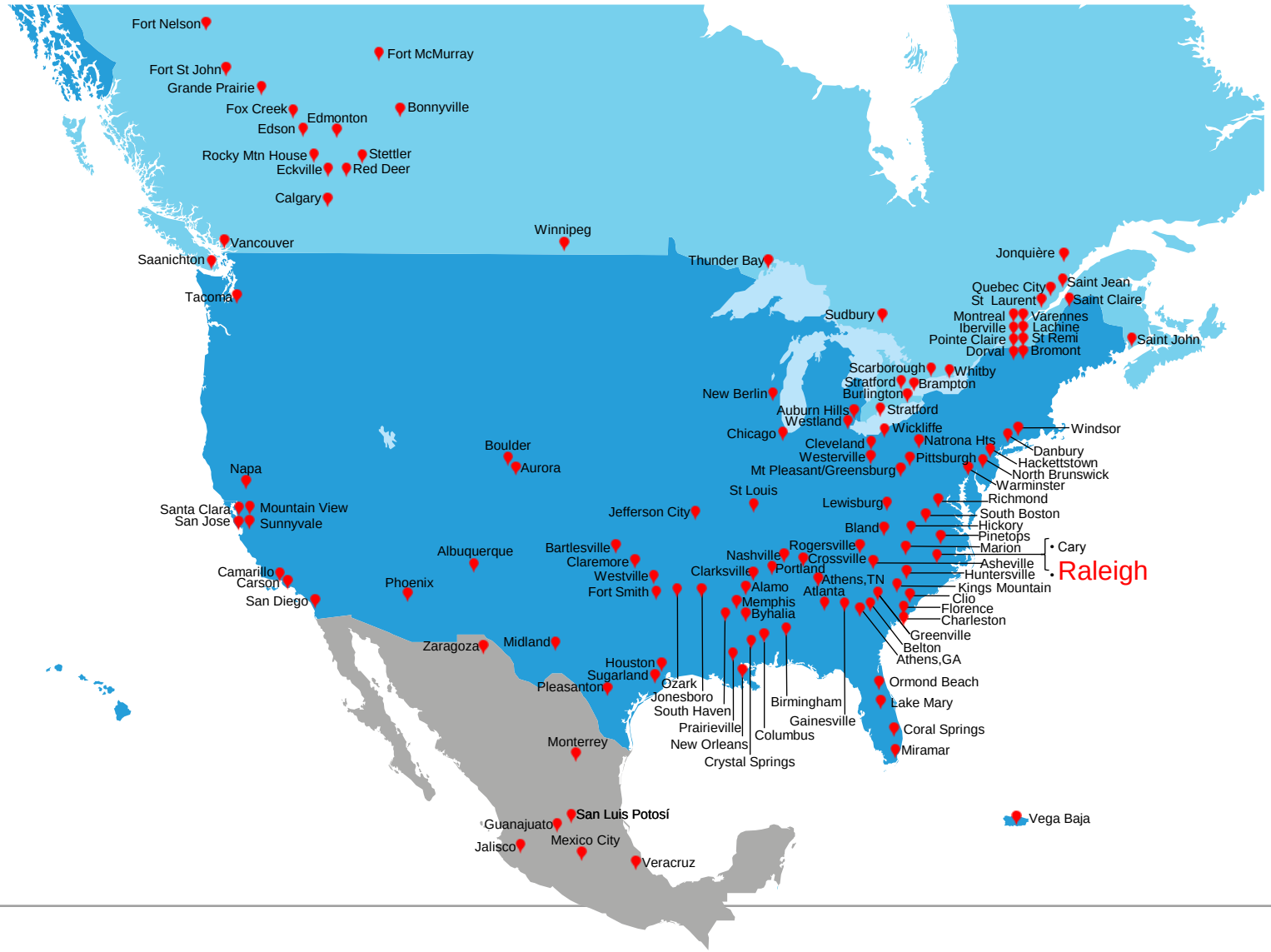
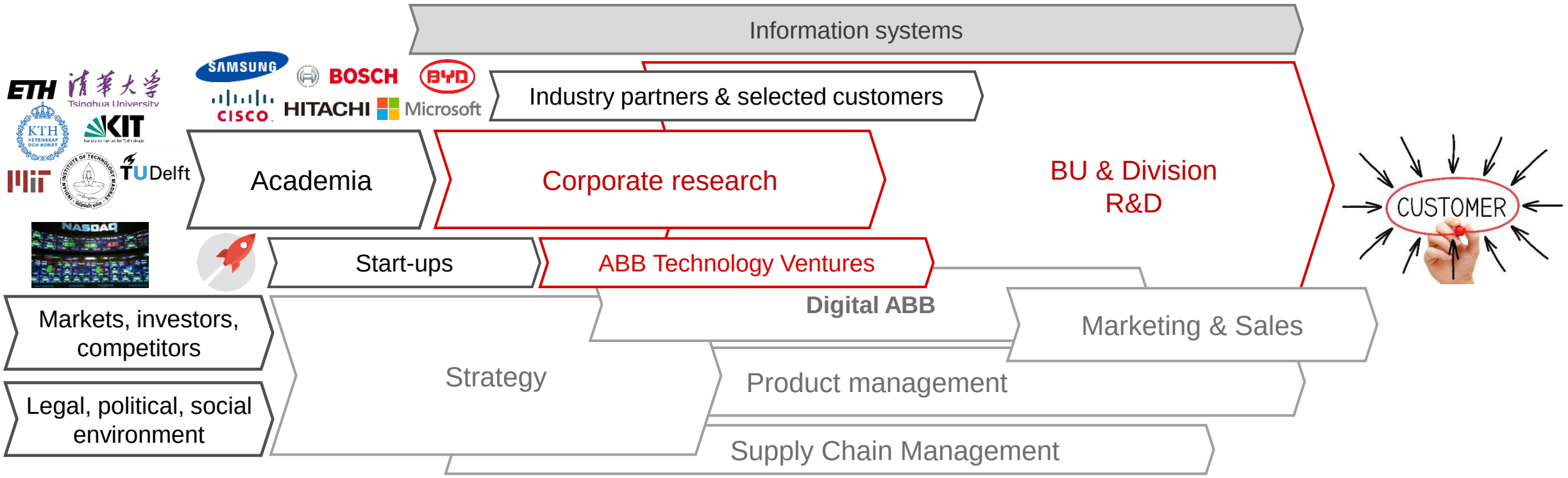
ABB North America Footprint

NAM REGION
Combined Locations



R&D ecosystem

innovation pipeline



R&D interacts with much richer and agile ecosystem

R&D
Internal ABB partners
External partners & environment

University Relations

A common framework and vision of how ABB best interacts with universities

Recruitment

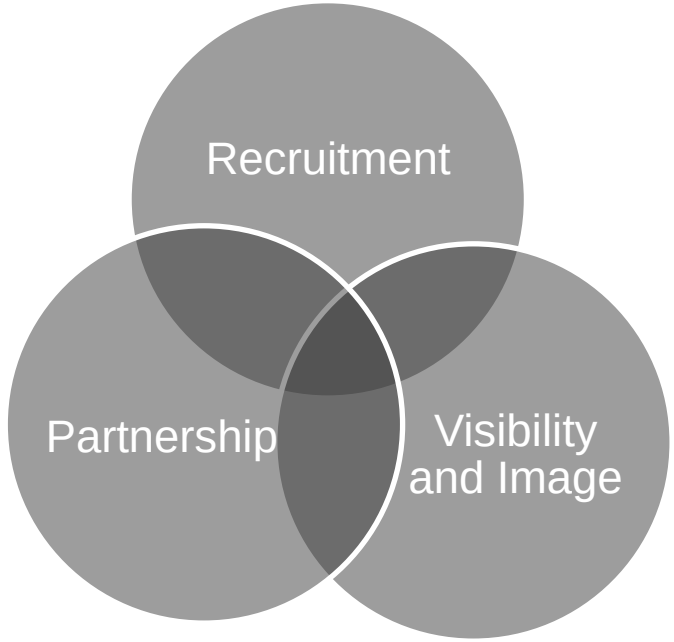
1. Recruit the best permanent employees from the best universities around the world
2. Recruit interns and postdocs regularly from the top universities

Partnership

1. Partner with leading universities worldwide through bilateral research contracts
2. Partner with leading universities on external funding opportunities (e.g. DOE, DOD)

Visibility and Image

1. ABB technologists give seminars, teach courses, supervise students at universities
2. Offer Professorships/Fellowships/Grants/Scholarships to students and professors at top universities
3. Donate or offer deeply-discounted equipment and software to universities



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USCRC University Relations

Existing Successful Models: A Summary


Partnership with academic institutions, national laboratories, private sector, and customers to advance the state of the art in R&D and demonstration projects.


Consortia of government, business, and academic partners focused on specific large-scale projects


Internship Program


Sponsor technical seminars and guest speakers


Structured university partnerships e.g. PAL/Co-Op Programs


Industrial PhD programs


Offering short courses, adjust professorships, student advising, capstone projects, equipment donations, etc…

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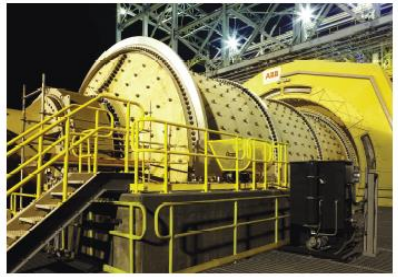
USCRC University Relations

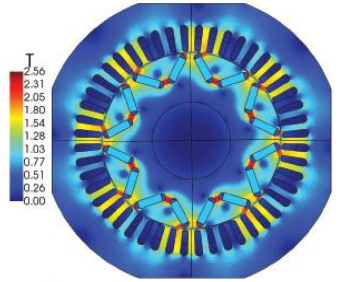
Broad Areas of Research

- Tailored programs and models to cater to the diverse needs of ABB research areas
- A subset of overall ABB's Univ. engagement

Control
Innovate automation, operation, protection and maintenance solutions for industrial and electrical systems including their associated components



Electromagnetics
Devise novel products and systems using insights into electromagnetics, dielectrics, heat transfer, acoustics and electro-chemistry



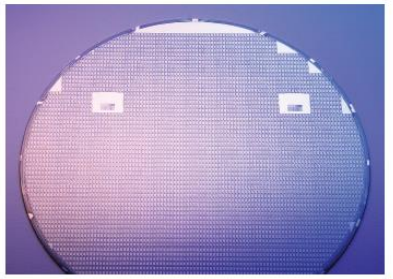
Materials
Investigate novel materials for future products as well as identify/deploy cutting edge manufacturing processes

Software
Create sustainable, secure, and user friendly software-based automation solutions, using efficient software engineering methods and architectures

Switching
Devise cutting edge AC and DC interruption technologies for the entire voltage range

Mechanics
Analysis, design, track manufacturing advances, use, and maintenance of diverse mechanical system (robotics to switchgear)

Power Electronics
Realize novel power electronic solutions and power semiconductors for diverse applications



Sensors
Create innovative measurement solutions for electrical and industrial systems, secure competence in electronics for smart and reliable devices

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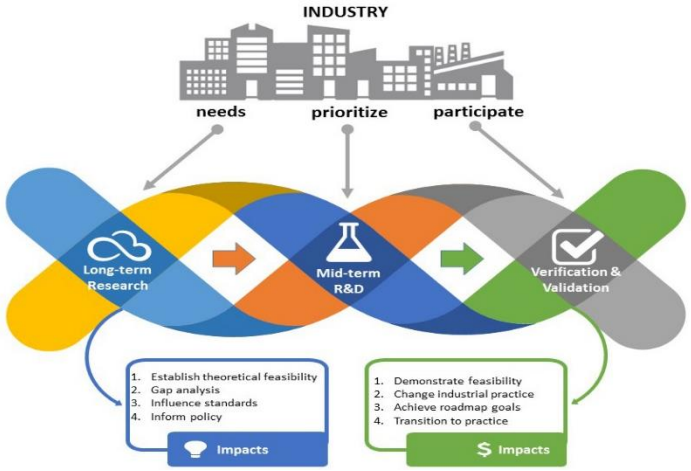
USCRC University Relations

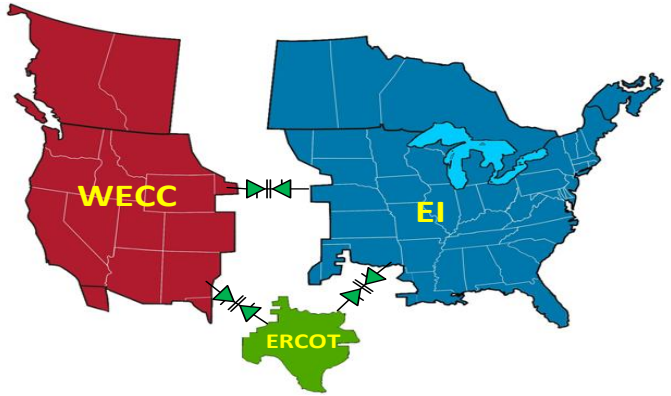
Existing Successful Models: Partnerships

Partnership for 3rd party-funded collaboration

- Complementary skillsets and opportunity to showcase ABB technologies
- Competency development in new areas with reduced risk
- Greater visibility and researcher career options

Example Collaborations: NCSU, UIUC, UTK, Texas A&M





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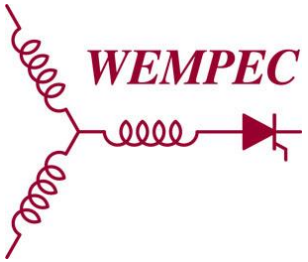
Existing Successful Models: Consortia Membership: Visibility and Image

- Consortium membership affords ABB a broader access to students, faculty and lab facilitates
- Boosts recruitment pipeline and company image as an innovator and technology leader



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Existing Successful Models: Internships and Co-ops

- Vibrant and active program that is a win-win!
- Fuels future recruitment pipeline and collaborations
- Students come from different schools and backgrounds to help with on-going projects or help scout new technologies
- Students work with their mentors, gain invaluable insights applying their skills to industrial applications, and learn new “soft skills” along the way
- Some may return for a second tenure or as a full-time employee

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