



CONSTRUCTION INDUSTRY INNOVATION

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National Institute for Building Sciences NIBS

Detroit, Michigan

Board of Directors Meeting

September 28th, 2005



**CONSTRUCTION
INNOVATION
FORUM**



**CONSTRUCTION
INNOVATION
FORUM®**



CIF GOALS

Recognize, promote, and disseminate information on innovations that improve quality and cost effectiveness of construction



CONSTRUCTION INNOVATION FORUM

- Non-profit originated in 1986 in Ann Arbor
- Response to BRT CICE Project
- Sole purpose: Recognize and encourage innovation in construction industry
- NOVA Awards presented annually
- 61 NOVA Awards in 15 years
- Open to all: Check your guns at the door



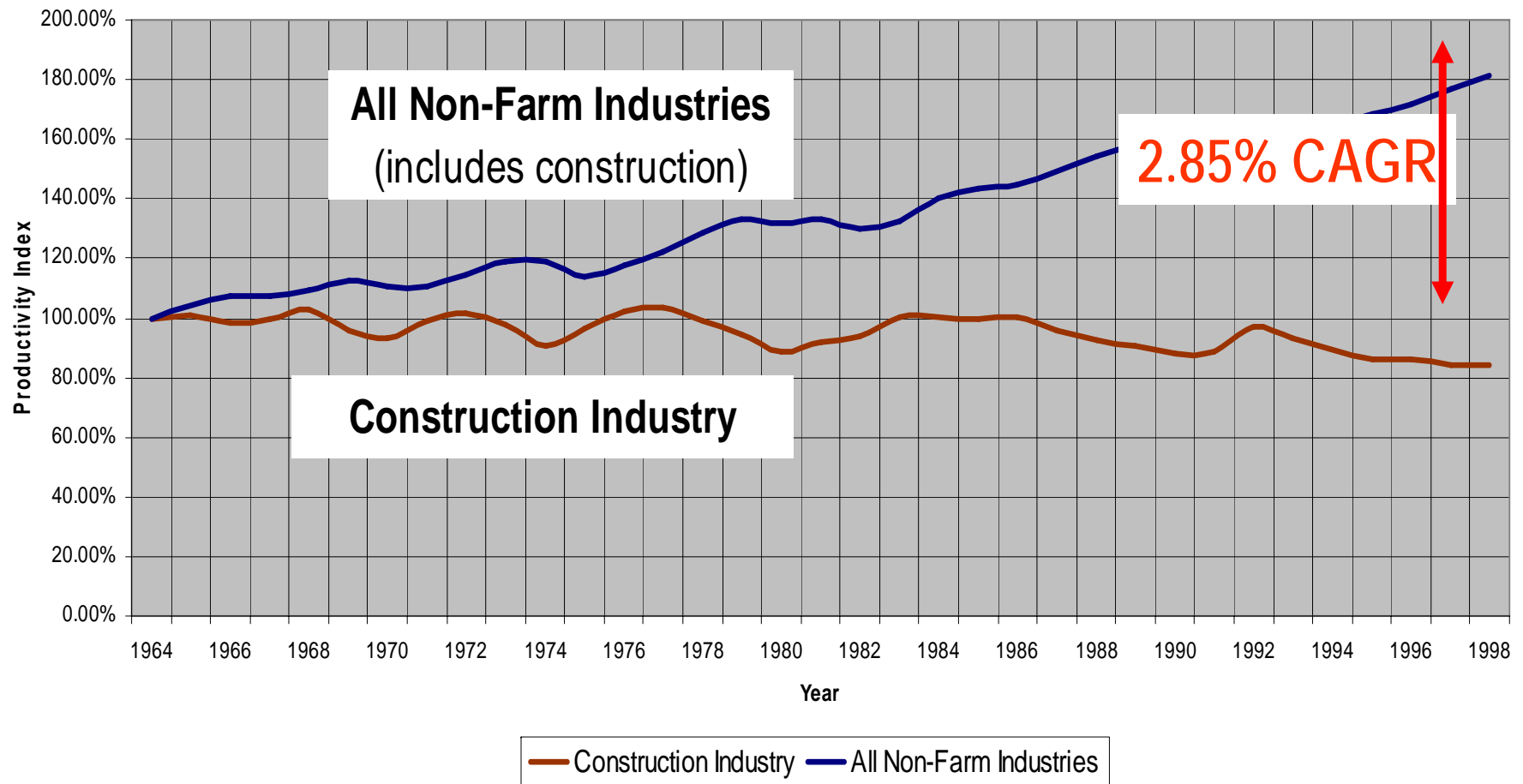
BROAD BASED

- Owners
- Contractors and Contractor Associations
 - ◆ General and Specialty
 - ◆ Union and Open Shop
- Building Trades
- Architects, Engineers, Faculty
- Suppliers of Material, Equipment, Services

Productivity Index

(1964-1998)

(Constant \$ of contracts / workhours of hourly workers)
sources: US Bureau of Labor Statistics, US Dept. of Commerce





YOU GET WHAT YOU ASK FOR

Improving Construction Safety Performance

BRT CICE A-3

1993

Zero Accident Study

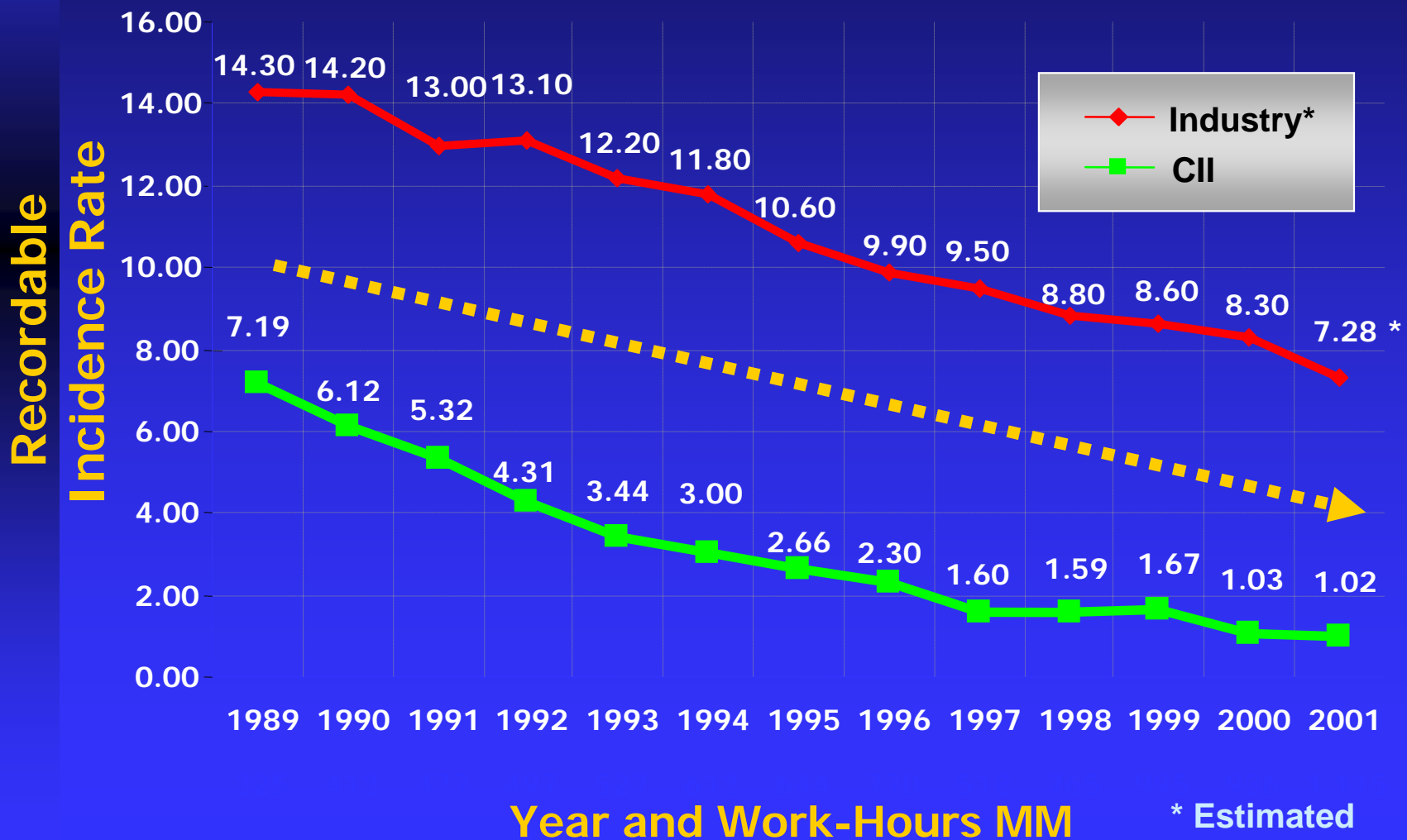
CURT

2000-2001



Safety Performance - RIR

Owners & Contractors





YOU GET WHAT YOU ASK FOR

Improving the Pace of Innovation in Construction



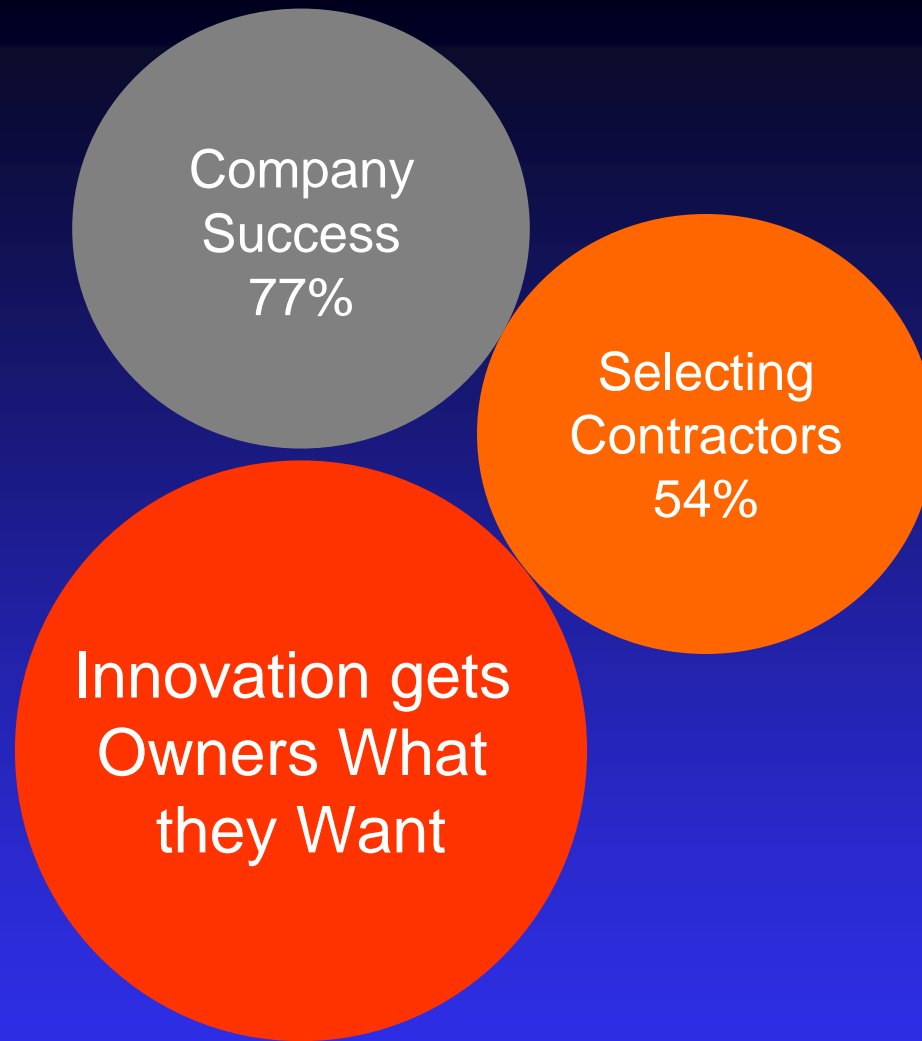
Innovation gets
Owners What
they Want

“One of the biggest owner frustrations is the lack of progress in technological innovation in the construction industry.” ENR 2003

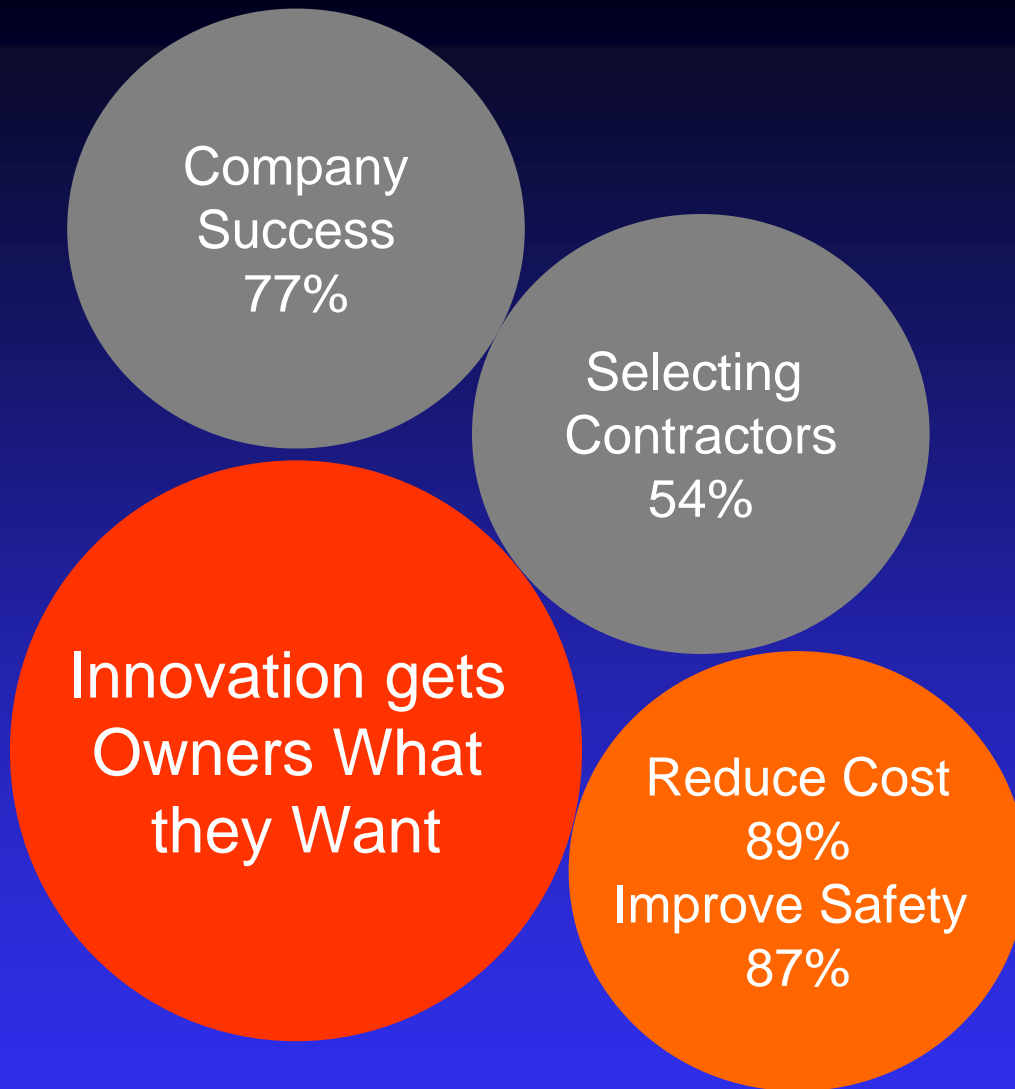


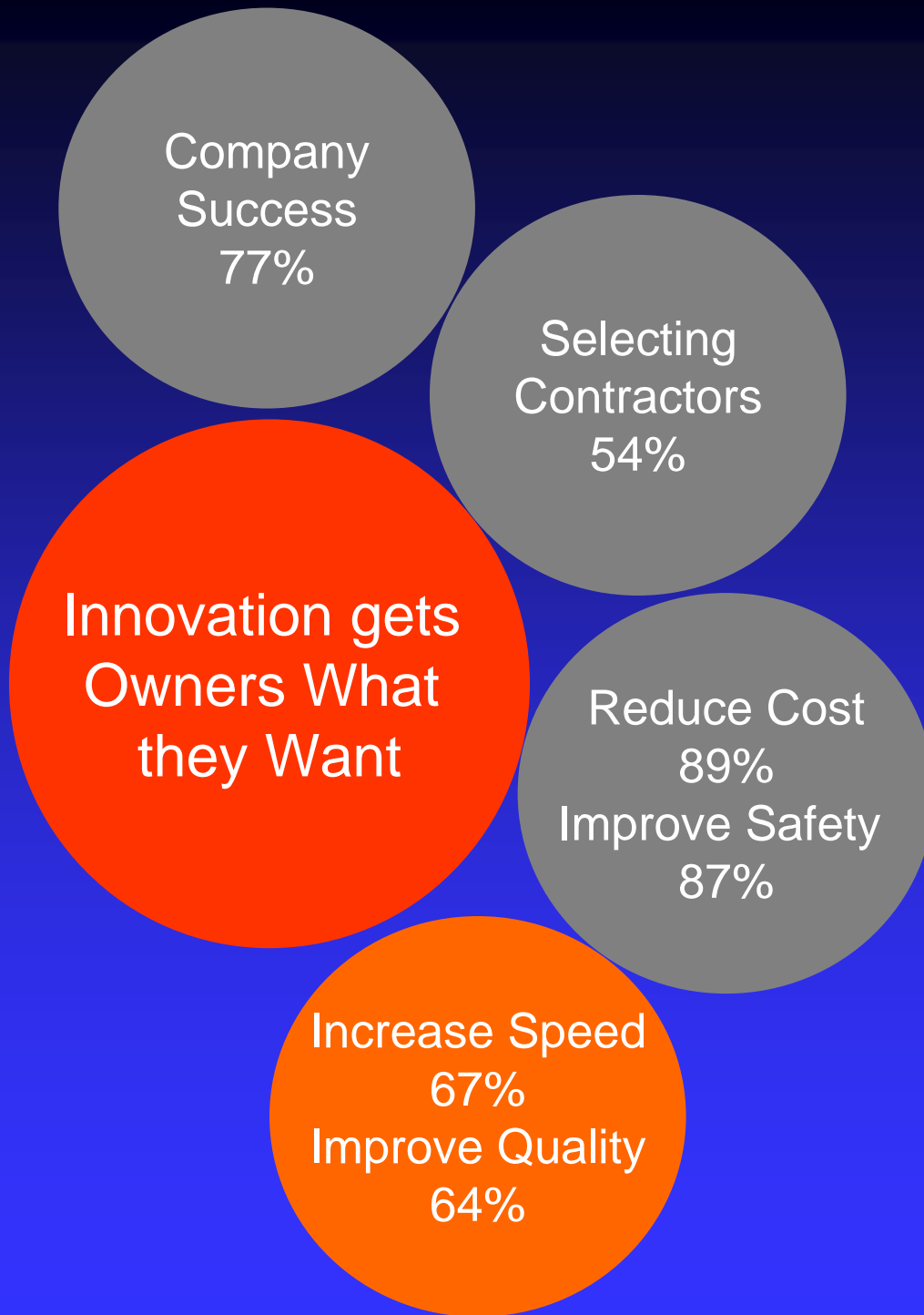
Company
Success
77%

Innovation gets
Owners What
they Want

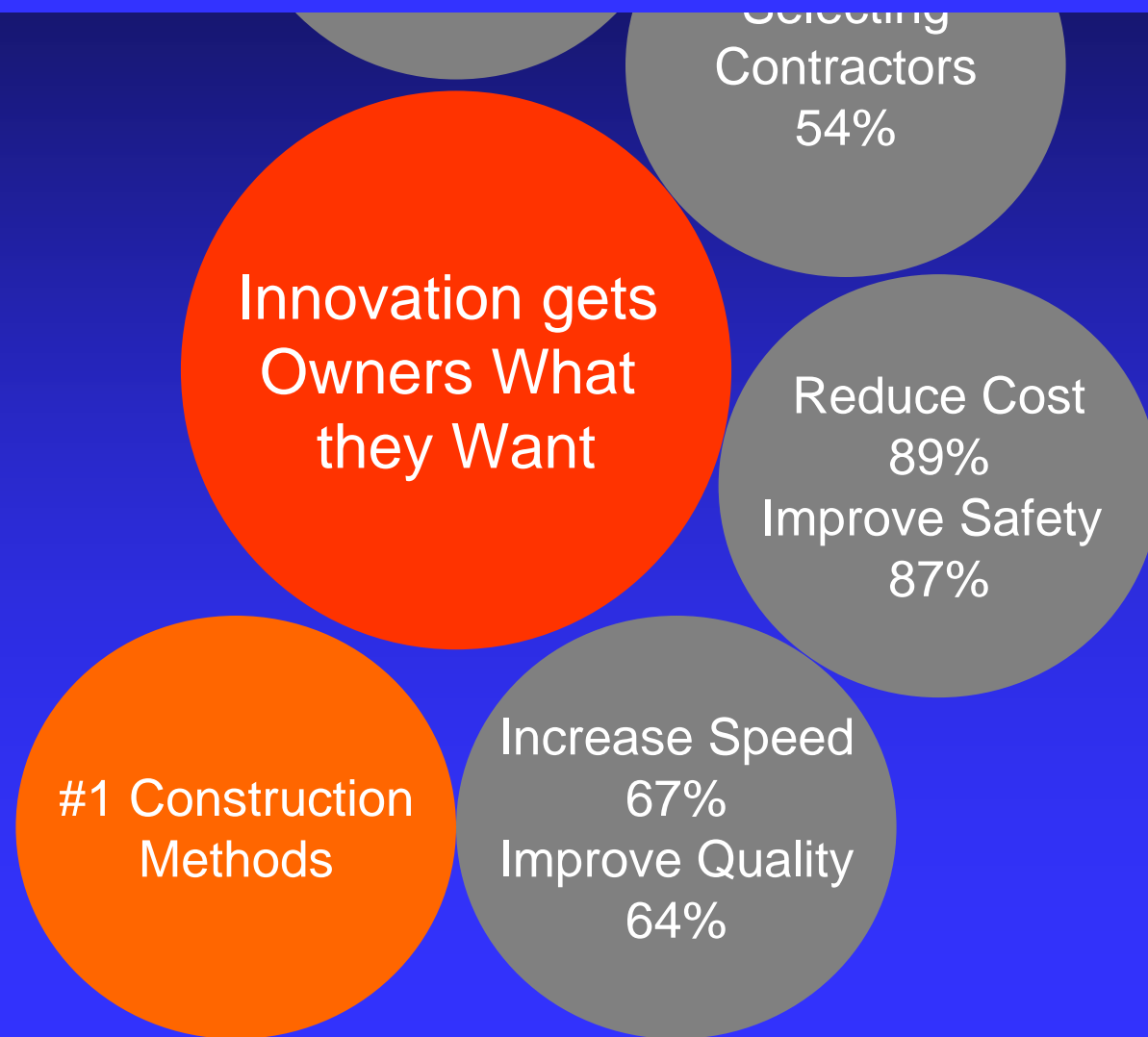


“Those subs who do not get up to speed will be left behind at bidding time.” ENR 2002

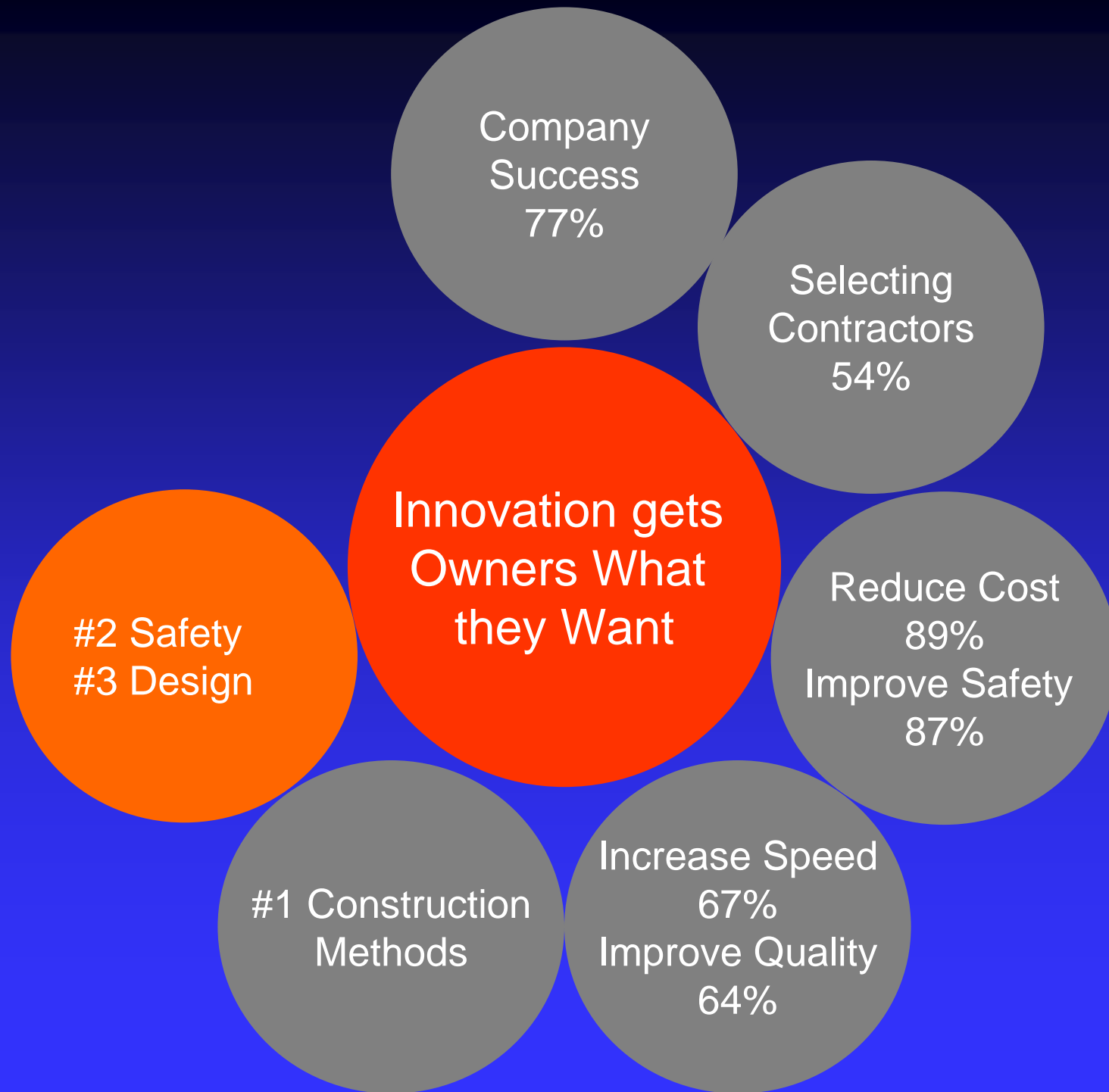


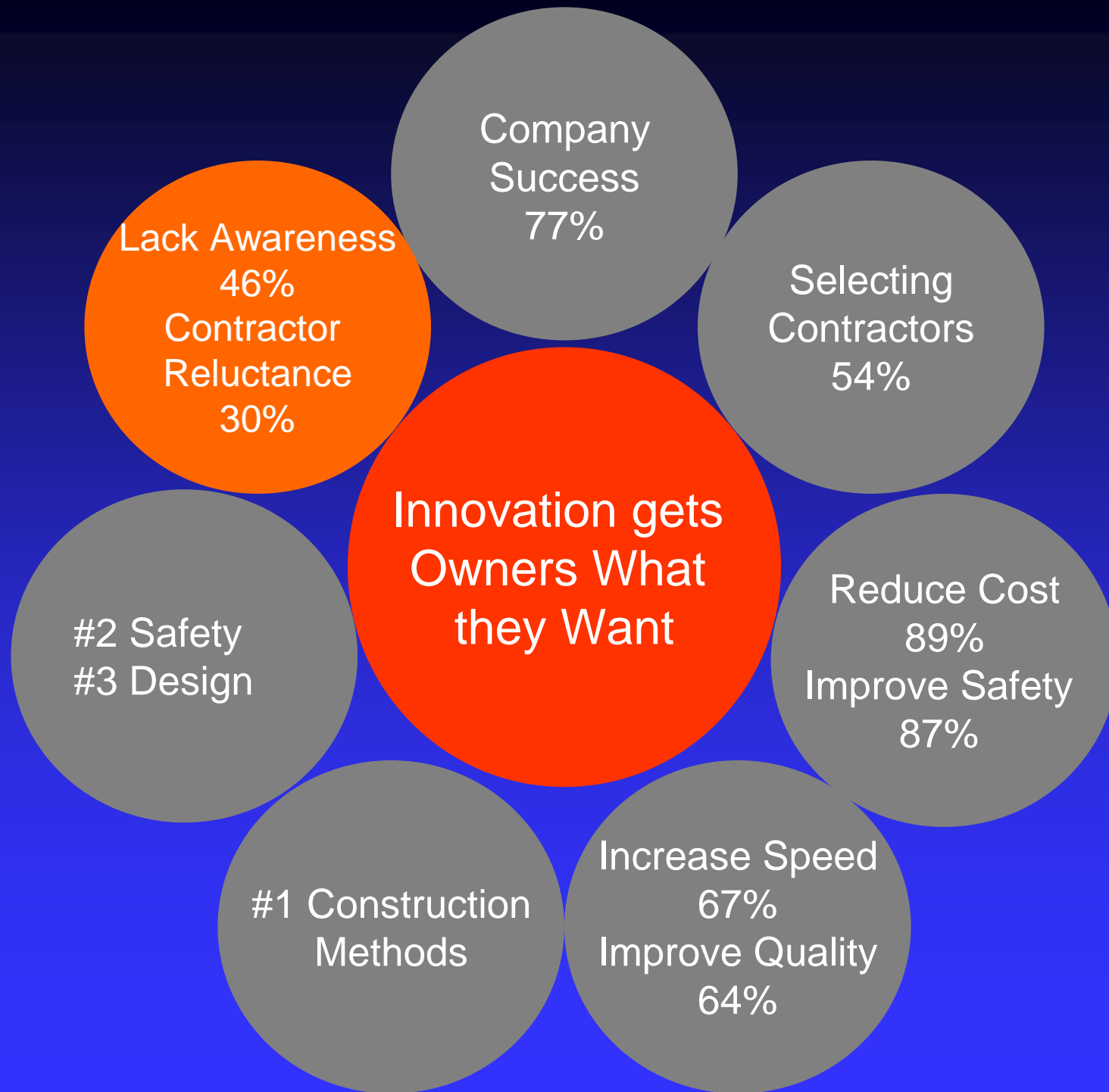


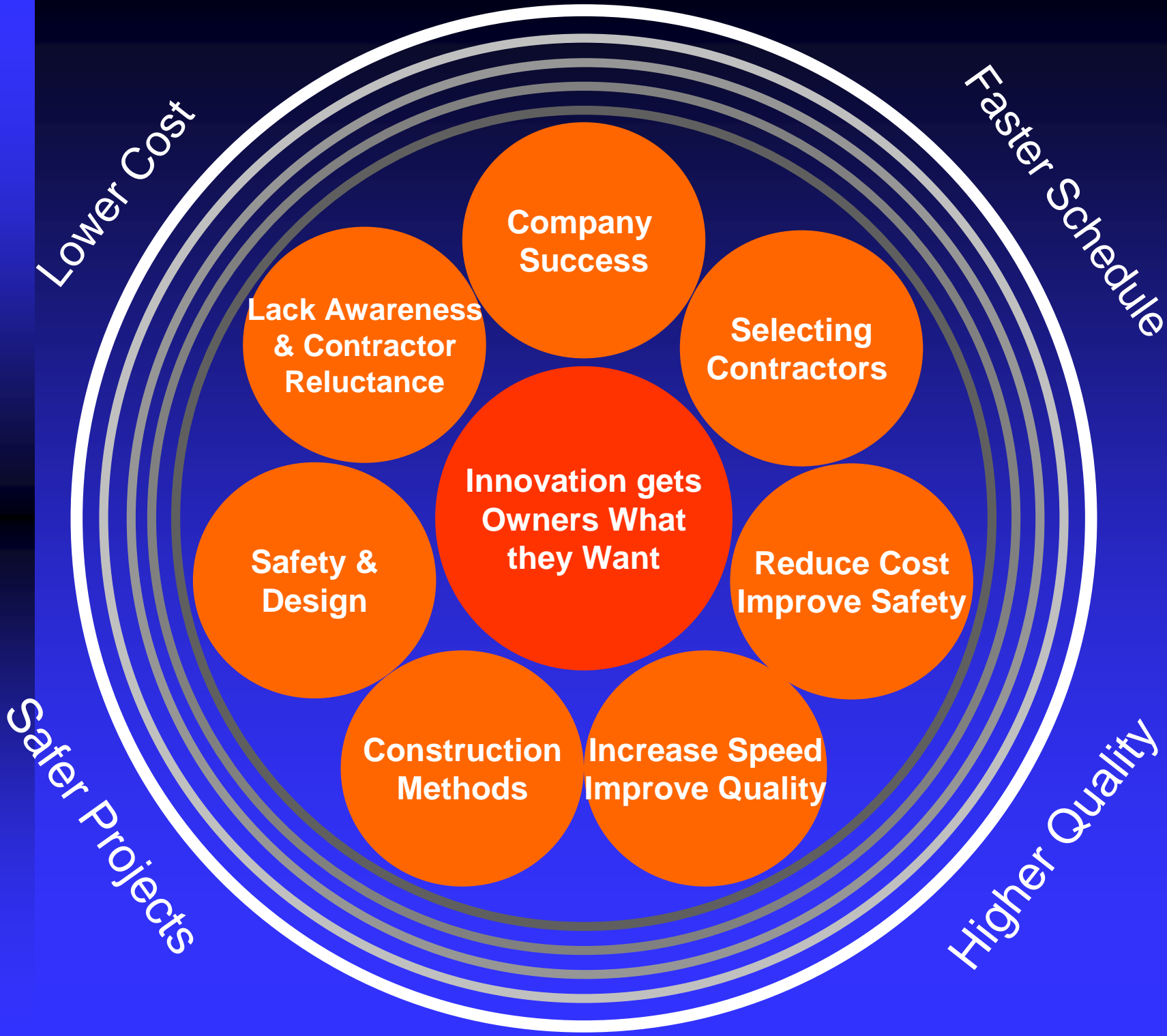
“Construction firms seem to cling to old business models and processes.” ENR 2003



Source: CIF/CURT Innovation Survey 2004









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Annual NOVA
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Assistance in
Developing
Innovation
Programs

CIF
Deliverables

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Publications



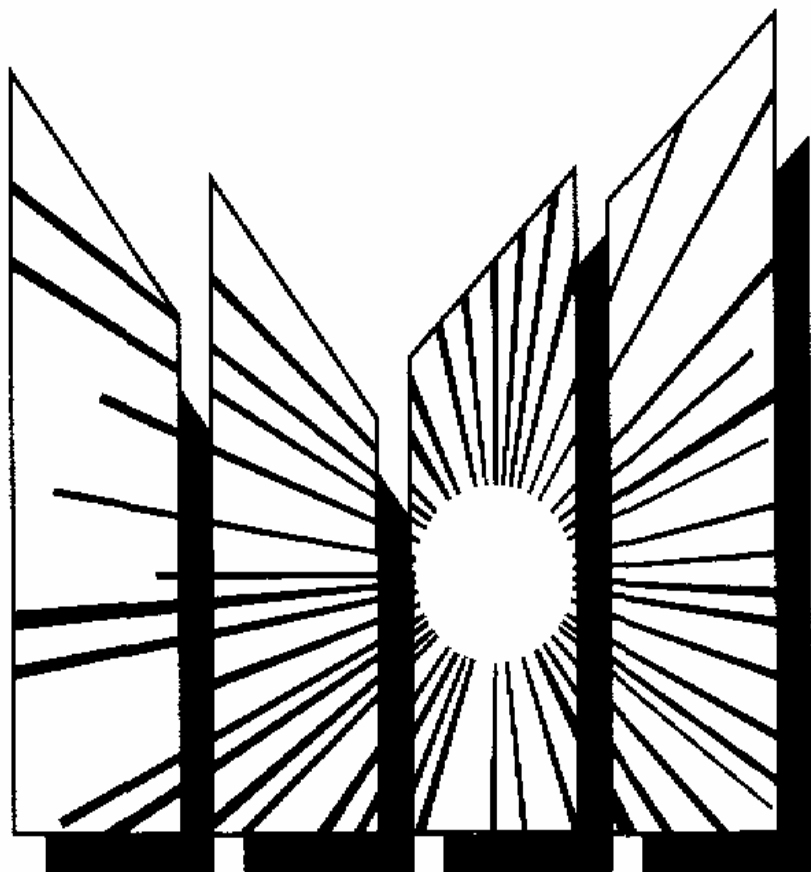
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CIF Delivers
Innovation



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T H E

N O V A

A W A R D S



UNIQUE NOVA AWARD PROCESS





NOVA AWARD CRITERIA


- Innovation judged by effect on construction process and facility service:
 - ◆ Construction process or project
 - ◆ Material, design, equipment
 - ◆ Contract, labor, management, training
 - ◆ Procurement, maintenance, use
- Proven success on a project
- Significant advance
- Documentable and presentable

3 PAGE NOMINATION

The Pre-Cast ArchPanel™ and the Cast-in-Place Steel-Free Concrete Br


Past

associated steel reinforcement in light of deck area



Present

steel-reinforced steel



Future

INNOVATION DESCRIPTION

Name of Innovation: The Pre-Cast ArchPanel™ and the Cast-in-Place Steel-Free Concrete Bridge Deck Slabs

The innovation we wish to submit for consideration is:

Construction Innovation Forum • NOVA Award Nomination Instructions

Step 1 Complete this page:
 • Enter a Descriptive Name for the Process/Method/Technology/Project you are nominating on line 3 of this page.
 • Be sure to provide original signatures in Section B and E on this page. Your nomination cannot be reviewed without them.
 • If you need additional space for names and addresses you may attach additional pages for names and address information.
 • You may attach extra pages for sheets.

Step 2 "Innovation Description" — attach one (one only) 8-1/2" x 11" page that gives a succinct written description of the innovation. Put the name of the innovation at top of page. Tell us what you think is innovative about this. You should include:
 • What the innovation is.
 • Why it is innovative.
 • What it changed or replaced.
 • Where and when it originated, has been used, and is expected to be used in the future.
 • If the nomination is for an innovative project, specifically identify its innovation(s).

Step 3 "Innovation Illustration" — attach one (one only) 8-1/2" x 11" page that contains one or more photographs, drawings, tables, graphs, etc., that visually describe the innovation. Do not submit more than one page of visuals. The jurors will see only one sheet for review. Put the name of the innovation at top of page.

Step 4 You must submit 15 (fifteen) sets of sheets for steps 1, 2 and 3 (a total of 45 pages).
 Nominations must be submitted by September 15, 2004 to:
 The Construction Innovation Forum, 350 S. Main Street, Suite 350, Ann Arbor, MI, USA, 48106-2131, Phone: 734-995-1848, Fax: 734-995-6853

A. Name of Innovation: **The Pre-Cast ArchPanel™ and the Cast-in-Place Steel-Free Concrete Bridge Deck Slabs**

B. Person(s) and/or Organization(s) Primarily Responsible for the Innovation (Those to whom the NOVA Award should be presented):
 Name: **Dr. Aftab A. Mufti, P. Eng.**
 Title: **Director, Nova Scotia Construction Centre**
 Institution: **Dalhousie University, DalTech**
 Address: **1360 Barrington St.**
Halifax, Nova Scotia B3J 2K4
 Phone: **902-423-6934**

Dr. Bairdar Bakht, P. Eng.
 Vice President
 JMGT Structures Research Inc.
 21 Whiteleaf Crescent
 Scarborough, ON M1V 2S1
 (416) 298-4391
 (416) 292-7374

Dr. Leslie G. Jaeger, P. Eng.
 Professor Emeritus
 Engineering Mathematics, Dalhousie Uni.
 1340 Barrington St., DalTech
 Halifax, NS B3J 1X9
 (902) 494-36029
 (902) 423-1801

P. Eng.

INVESTIGATION REPORT



THE NOVA AWARD STATUE





NOVA AWARD WINNING INNOVATIONS INCLUDE

- Safety and training
- Green construction
- Advanced imaging
- On-site child care
- Modular design
- Seismic/dynamics
- Concrete technology
- 3D as-built drawings
- Labor/management
- Non-destructive testing
- Subsurface exploration
- Performance monitoring
- Moisture protection
- Advanced structures
- Control systems
- Composite structures
- Innovative projects
- Automation

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Construction Innovation Forum[®]
Founding organization of the international NOVA Award competition. The Construction Innovation Forum (CIF) is an

2005 NOVA Awards Banquet
The 2005 Nova Awards will be presented **November 8, 2005** at the 2005 Construction Users Roundtable (CURT) National Conference in Naples, Florida.

DATABASE SEARCH

CIF
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Google™ SAFETY Google Search
 Search cif.org Search WWW

Search the Construction Innovation Forum web site (www.cif.org) for innovations and information, or search the entire world wide web from the CIF site. Your searches will appear in a new browser window, so you will not interrupt your connection to the CIF site.

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BANQUET



80 SAFETY NOMINATIONS



Google

SAFETY

Google Search

Search WWW Search cif.org

Search results from cif.org for safety.

Results 1 - 10 of about 105. Search took 0.14 seconds.

[Safe2Work Tracking of Employee Safety Awareness Training and Drug ...](#)

Safe2Work is the proven Internet solution that delivers, reports, documents and tracks the basic safety awareness training and drug screening status of Michigan's unic

[www.cif.org/Nom2003/Nom18_03.pdf](#) - Similar pages

[The Behavioral Advanced Performance Process \(BAPP\)](#)

BAPP technology is a leading-edge process approach to reducing exposure to injury by helping organizations to identify safety-related behaviors, gather data, provide

[www.cif.org/Nom2003/Nom11_03.pdf](#) - Similar pages

[Construction Site Drug-Screening](#)

The on-site screening is a new approach to construction-site substance abuse prevention programs. It is cost-effective, time-efficient and prevents anyone using illegal s

[www.cif.org/Nom2001/Nom18_01.PDF](#) - Similar pages

[E-Library on Occupational Safety and Health](#)

Top-quality information about prevention of construction work-related injuries, illnesses, and deaths that makes it readily available to site owners, supervisors, and workers.

[www.cif.org/nominations/nom_386.html](#) - 16k - [Cached](#) - [Similar pages](#)

[Full Head Safety Strip Nails](#)

Full Head Safety Strip Nails are designed for use with power nailing applicators. This strip eliminates flying debris at the worksite and increases the safety of the user.

[www.cif.org/nominations/nom_36.html](#) - 16k - [Cached](#) - [Similar pages](#)

[WMATA Construction Safety Awareness Program](#)

A possible safety awareness program award or penalty is also established for each contract. ...

[www.cif.org/nominations/nom_48.html](#) - 16k - [Cached](#) - [Similar pages](#)

[Training Matrices Track Worker Safety Training](#)

Training Matrices are a management tool that permits Managers and Supervisors to track training requirements for project personnel. These requirements are determined for each project by the Training Qualification Plan (TQP).

[www.cif.org/nominations/nom_326.html](#) - 16k - [Cached](#) - [Similar pages](#)

[Ventilating MWRA's 9.5-Mile Effluent Outfall Tunnel](#)

On July 12, 1999, the tragic deaths of two divers in the outfall tunnel brought the tunnel portion of the project to a halt. The divers were victims of the failure of their bo

[www.cif.org/Nom2001/Nom35_01.pdf](#) - Similar pages



“SAFE 2 WORK”

INTERNET TRACKING OF WORKER STATUS

2003 Nova Award Nomination 18

Safe2Work

Tracking of Employee Safety Awareness Training and Drug Screening Status

What the innovation is:

Safe2Work is the proven Internet solution that delivers, reports, documents and tracks the basic safety awareness training and drug screening status of Michigan's unionized construction population. It provides verification of individual worker's drug test status and safety training status - all in one, centralized, online database location. Safe2Work™ simplifies record keeping for safety professionals and company administrators at all levels. It accurately and reliably reports the workforce readiness of a very mobile employee population from wherever there is Internet access, 24 hours a day. Currently, Safe2Work™ documents and tracks 30,000 drug tests annually and records the 50,000 mastered, online, safety-training tests of 10,800 workers. (This increases each month.)

Where and when it originated:

The planning of the Safe2Work™ Program began in 1998 as a collaborative effort among the Safety Committee of the Great Lakes Construction Alliance, Management and Unions Serving Together (M.U.S.T.) and Coastal Training Technologies Corp., Virginia. Its development culminated in the launching of the Safe2Work™ website on July 5, 2000.

Where it has been used, and is expected to be used in the future:

Poised to expand nationwide, Safe2Work™ currently serves the unionized construction population throughout the state of Michigan. First endorsed by Detroit Edison, the CDROM basic safety foundational awareness training of Safe2Work™ is (to date) part of the mandated bid package requirements for General Motors, Detroit Edison, Ford Motor Company and Daimler Chrysler.

DATABASE INNOVATIONS

■ Safety	80	■ Workers	126
■ Quality	68	■ Automation	46
■ Cost/Value	154	■ Manage	73
■ Structure	105	■ Contractor	87
■ Composite	68	■ Owner	48
■ Concrete	153	■ Seismic	23
■ Steel	129	■ Soil	46
■ Computer	77	■ Roof	45

Note: Many innovations impact more than one area.

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CIF PUBLICATIONS

- 15 Years = 505 NOVA Nominations, with Google Search
- Annual Summaries of NOVA Nominations
- Widely Visited Web Site: www.cif.org
- CD Rom Video of NOVA Award Winning Innovations
- “Annotated Bibliography of Construction Innovation”
- Detroit Owners’ Role in Construction Improvement
- *Construction Business Review Technology* Column
- Annual Mock Jury Kit
- Nomination Investigation Reports w/ 5 yr delay
- *Innovator* Newsletter



VISITS/HITS TO WWW.CIF.ORG

- Home page = 70,000/yr = 280/ work day
- Nominations = 280,000/yr = 1,120/ work day
- Other pages = 160,000/yr = 640/ work day
- Total pages = 510,000/yr = 2,040/ work day

- 505 Nominations average 280,000 / 505
= 554 hits / nomination / yr = 2 / work day
- 54 Nominations > 1,000/yr = 4 / work day



High Hitting Nominations @ www.cif.org

		<u>annual hits*</u>	<u>rank on.. Google**</u>
1.	NovaBrik mortarless brick siding ^{NOVA}	7,892	8th
2.	E-library - construction safety & health	6,354	4 th
3.	Automatic rebar tying machine ^{NOVA}	3,782	2nd
4.	SafeSpan multi-span bridge platform ^{NOVA}	3,095	3rd
5.	Concrete maturity temperature logging ^{NOVA}	3,022	1st
6.	Residential utility trenching machine	2,664	1 st
7.	Insulated concrete wall panels	2,499	2 nd
8.	Automatic self-climbing concrete formwork	2,305	1 st
9.	Rinnai Continuum tankless water heater	2,231	28 th
10.	ECO-Block insulating concrete forms	2,169	4 th
11.	Segmental precast concrete underpinning piles	1,946	1 st
12.	Overhead launch girder for steel bridge erection	1,939	1 st
13.	FlexLock mortarless masonry walls	1,826	1 st

*hits/day = (annual hits)/250

**number on list of Google hits

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Assist / Inspire
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Publications



ASSIST/INSPIRE **INNOVATION** PROGRAMS ORGANIZATIONS

- CERF Construction **Innovation** Centers
- International Council for Research and **Innovation** in Building and Construction (new name for CIB in 1998) has 500 member organizations, 5,000 experts, 50 commissions worldwide.
- CIF **innovation** alliance with Construction Users Roundtable CURT
- Construction **Innovation** Conference, ENR
- CII Emerging Technologies Project and Breakthrough Strategy Committee
- Great Lakes Construction Alliance GLCA: Safe2Work Program
- Canada's Construction **Innovation** Forums 2001, 2003, National Steering Committee for **Innovation** in Construction
- DTE Energy, City of Detroit, DuPont, General Motors, Michigan DOT, University of Michigan, BRT Construction Group innovation programs
- Master of Science in Construction **Innovation** in UK: Loughborough University, Glasgow Caledonian University, University of Strathclyde
- ACCI: Australian Center for Construction **Innovation**
- CRC: Cooperative Research Centre for Construction **Innovation**, Australia
- European Council for Construction, Research, Development, and **Innovation** ECCREDI, European Commission, Belgium
- Other Construction **Innovation** Centers: U Cincinnati, U Teeside (UK), Loughborough U (UK), Unitec (New Zealand), Hong Kong Polytech, Dublin IT (Ireland), Royal Melbourne IT (Australia), Constructing Excellence (UK), U Salford (UK), Arizona State U-Scottsdale, U New South Wales (Australia), U Oregon
- New Construction Research and **Innovation** Strategy Panel, nCRISP, UK



ASSIST/INSPIRE **INNOVATION** PROGRAMS AWARDS & PUBLICATIONS

- CERF *Charles Pankow Award for **Innovation***
- *Henry C. Turner Prize for **Innovation** in Construction Technology*, Turner Construction and National Building Museum
- *Excellence in **Innovation** award*, Canadian Construction Association
- *Most **Innovative** Products*, World of Concrete, Las Vegas 2006
- CII Emerging Technologies Web Site:
www.new-technologies.org/ECT
- *Construction **Innovation***, an ejournal by Arnold Journals On-Line
- *Construction **Innovation***, quarterly journal, National Research Council, Canada
- *Built Environment & Manufacturing **Innovation***, bimonthly, Australia
- *Construction Business Review* and its monthly “Technology” column
- “Rethinking Construction **Innovation** and Research” Department of Trade and Industry, United Kingdom
- “Bridging **Innovation** Gap” Project, Center for Integrated Facilities Engineering, Stanford U.

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