

A*STAR Mission



Fostering world-class scientific research and talent for a vibrant knowledge-based Singapore



Chairman A*STAR

MD A*STAR

**Science &
Engineering
Research
Council**

**Joint
Council
Office**

**Biomedical
Research
Council**

**A*STAR
Graduate
Academy**

**Corporate
Group**

Research Institutes (RIs)

**BMRC has 7 RIs and
5 Research Consortia
SERC has 7 RIs.**

Other Scientific Services Outfits

- **Biopolis Shared Facilities**
- **Biological Resource Centre**
- **National Breeding Centre**
- **Singapore Tissue Network**
- **National Metrology Centre**
- **Computational Resource Centre**

Commercialization Outfits

- **Exploit Technologies**
- **Experimental Therapeutics Centre**
- **Industry Development Group (BMRC)**

How did Illinois get to Singapore?

- A decade and a half of engagement **and collaboration** with Singapore, EDB and A*STAR that has led to **1st multi-institutional degree with NUS**
- **ADSC** Negotiations started in 2005
- 2009 – Advanced Digital Sciences Center (ADSC)
 - Physical presence for Illinois in Singapore
 - Visiting Illinois faculty
 - Singapore-based permanent research faculty
 - Students in Illinois Ph.D. programs
 - ADSC support staff

Advanced Digital Sciences Center: Illinois at Fusionopolis!

<http://adsc.illinois.edu/>

- 30 resident researchers with PhDs
- 14 visiting professors from Illinois
- Resident and visiting students

Main research focus is IT.



***ADSC is a
University of Illinois
research
center
in Singapore.***



***Professors from
Computer Science
Computer Engineering***



***technology
transfer***

Interactive Digital Media
Smart Grid



Agency for
Science, Technology
and Research

S\$75M+ S\$20M 2009–2017

THE UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Why is ADSC in Singapore?



Build global industrial & research connections!

Help build the knowledge-based economy in Singapore!

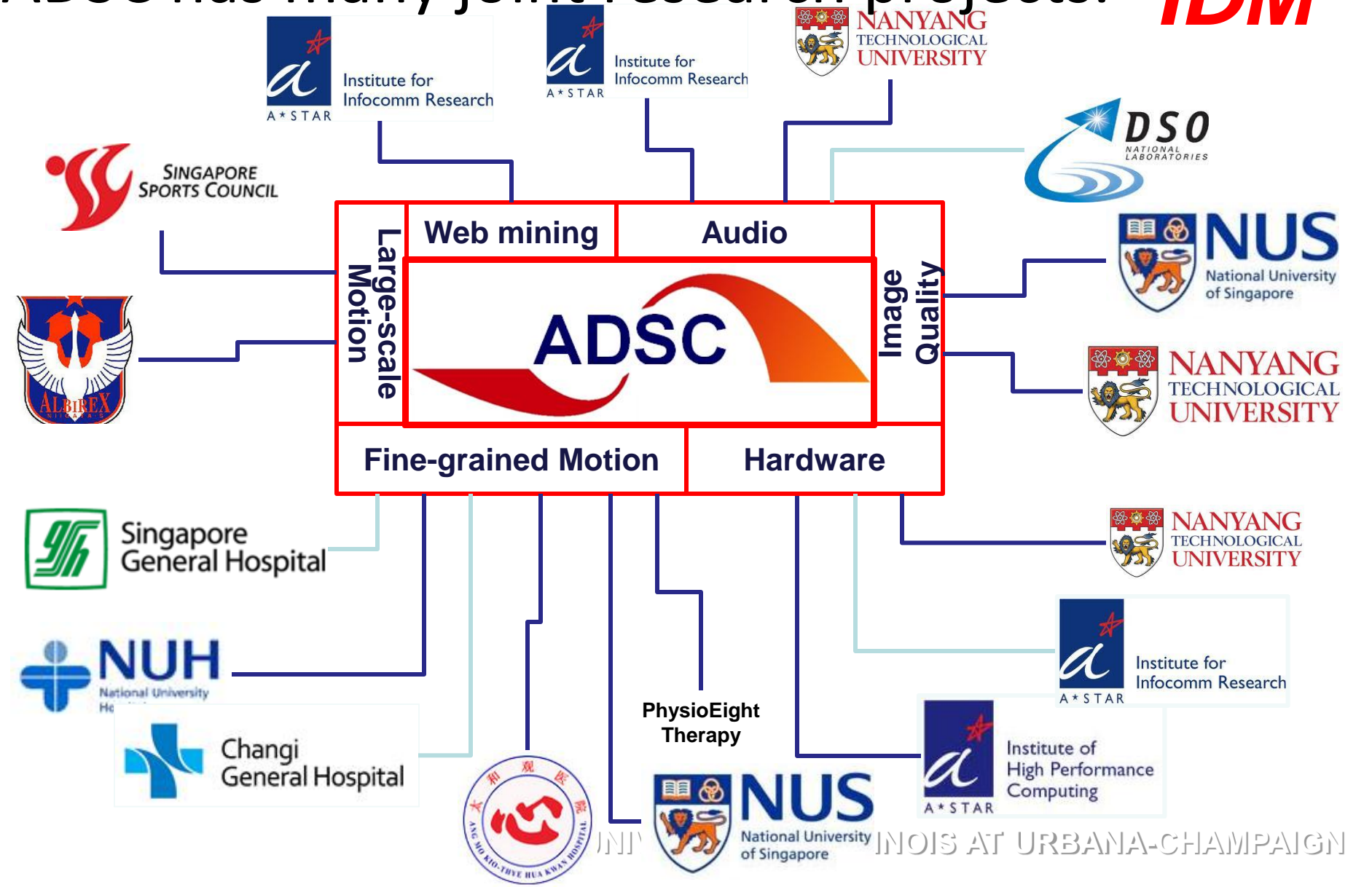
Why is A*STAR Funding “Illinois”?

Facilitate students and researchers from both sides;

- To have opportunity to experience global research in a vibrant knowledge-based Singapore**
- To collaborate with great professors who do world-class research in top-notch facilities.**
- To live in a vibrant, supportive international community.**
- To become one of the many Illinois alumni who go on to do great things.**

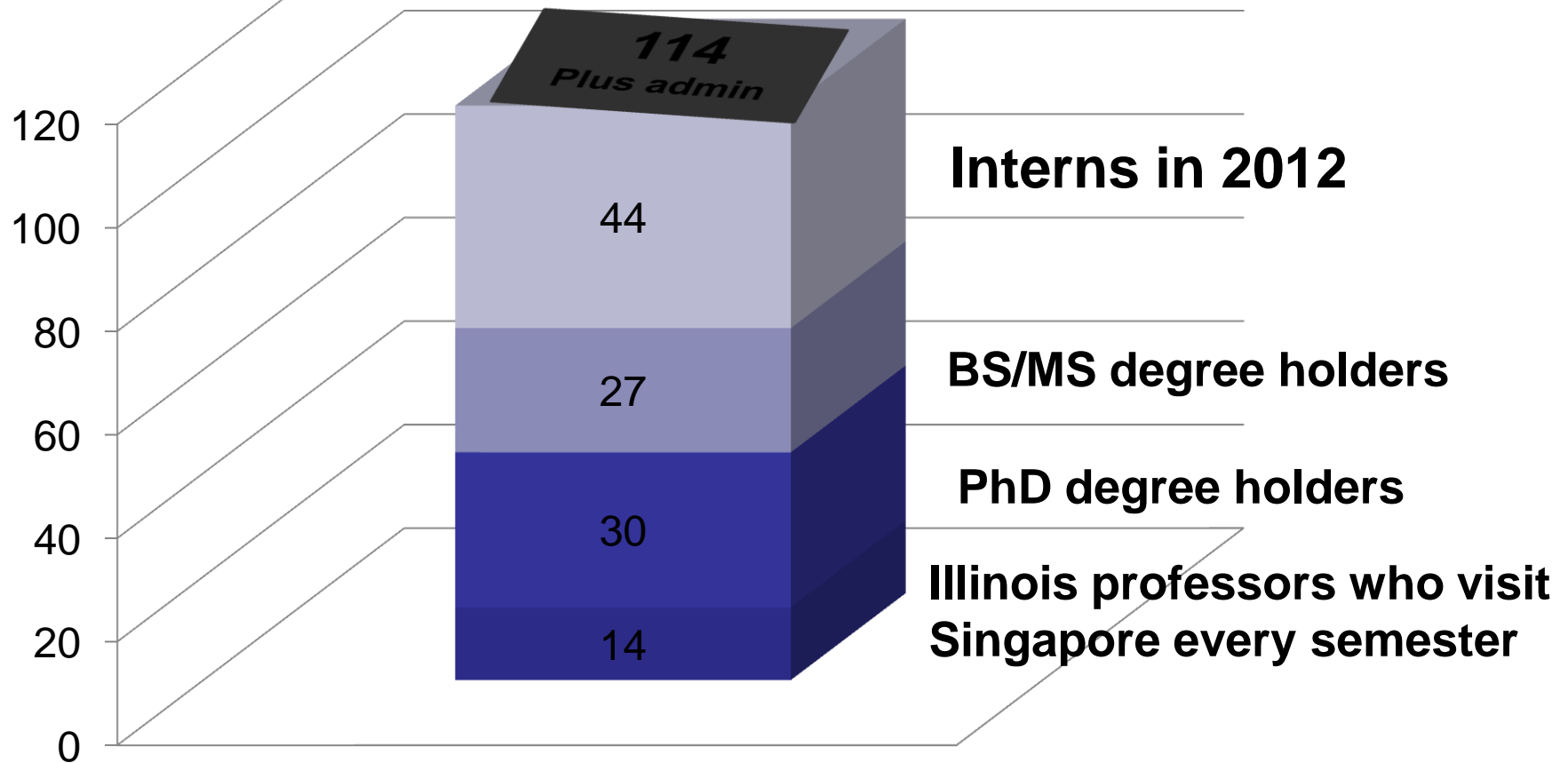
What do we do?

ADSC has many joint research projects. **IDM**



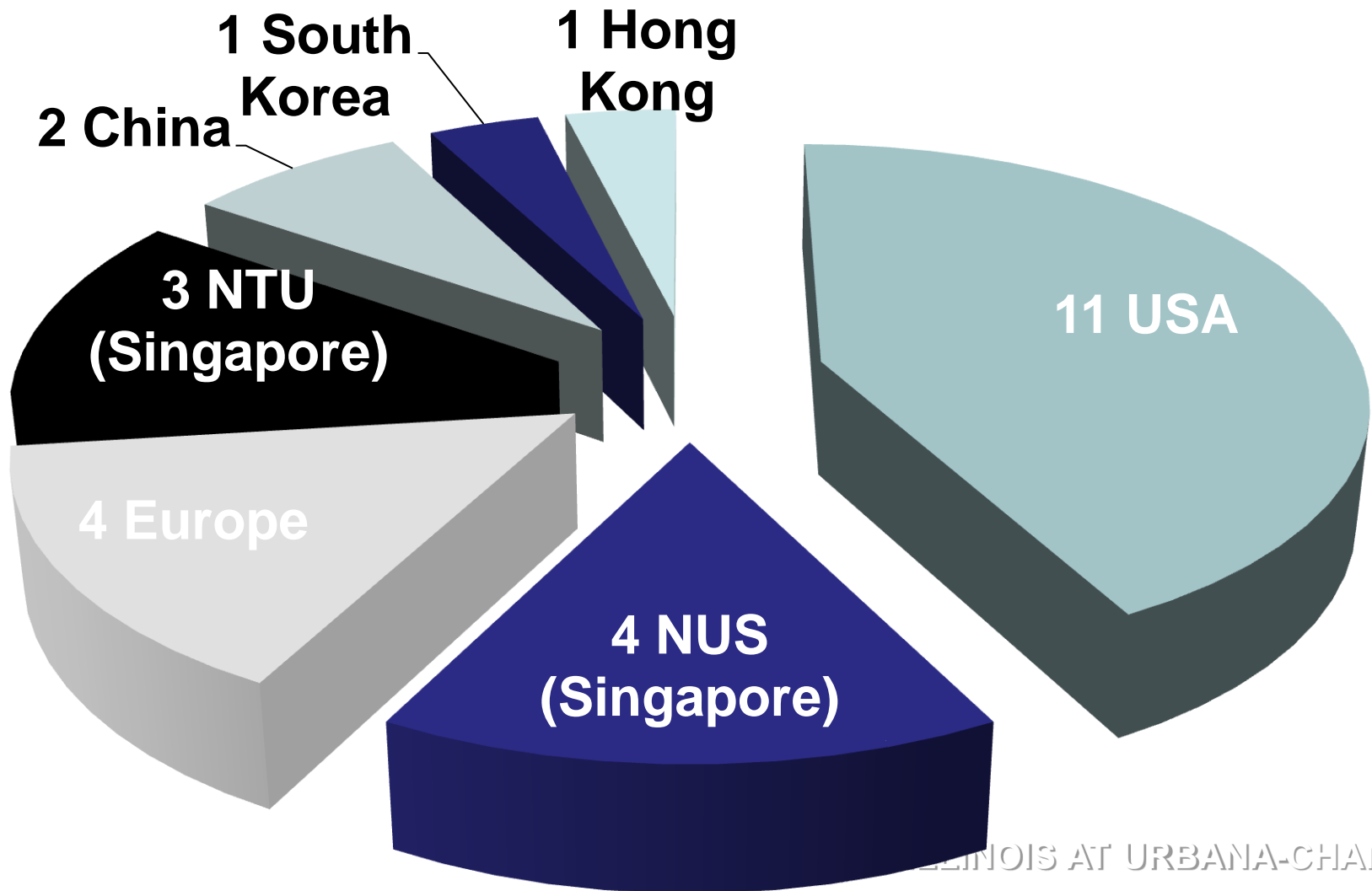
Who are we?

ADSC has ~60 full-time researchers in Singapore, half with Phd.



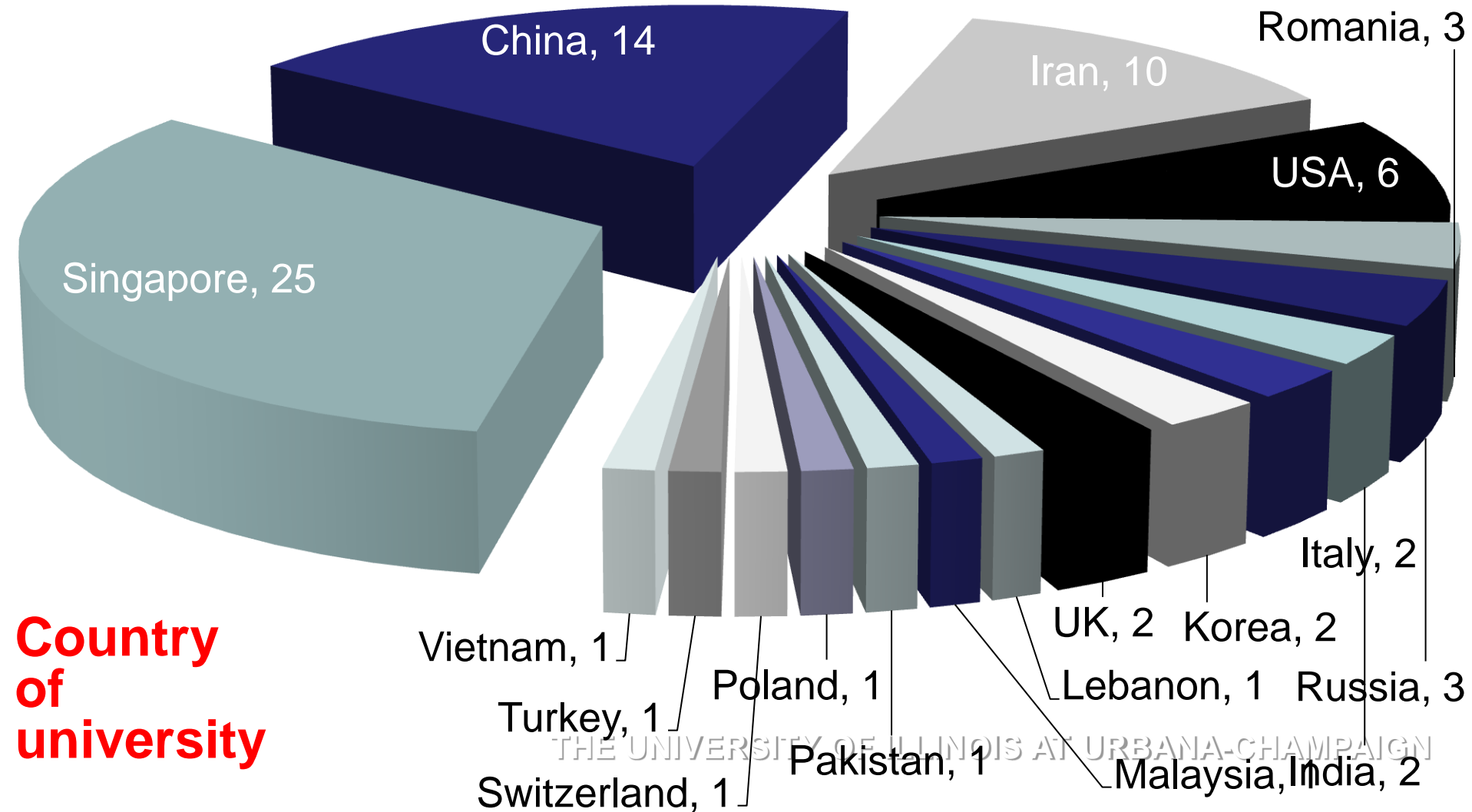
Who are we?

Our people come from PhD programs all over the world...



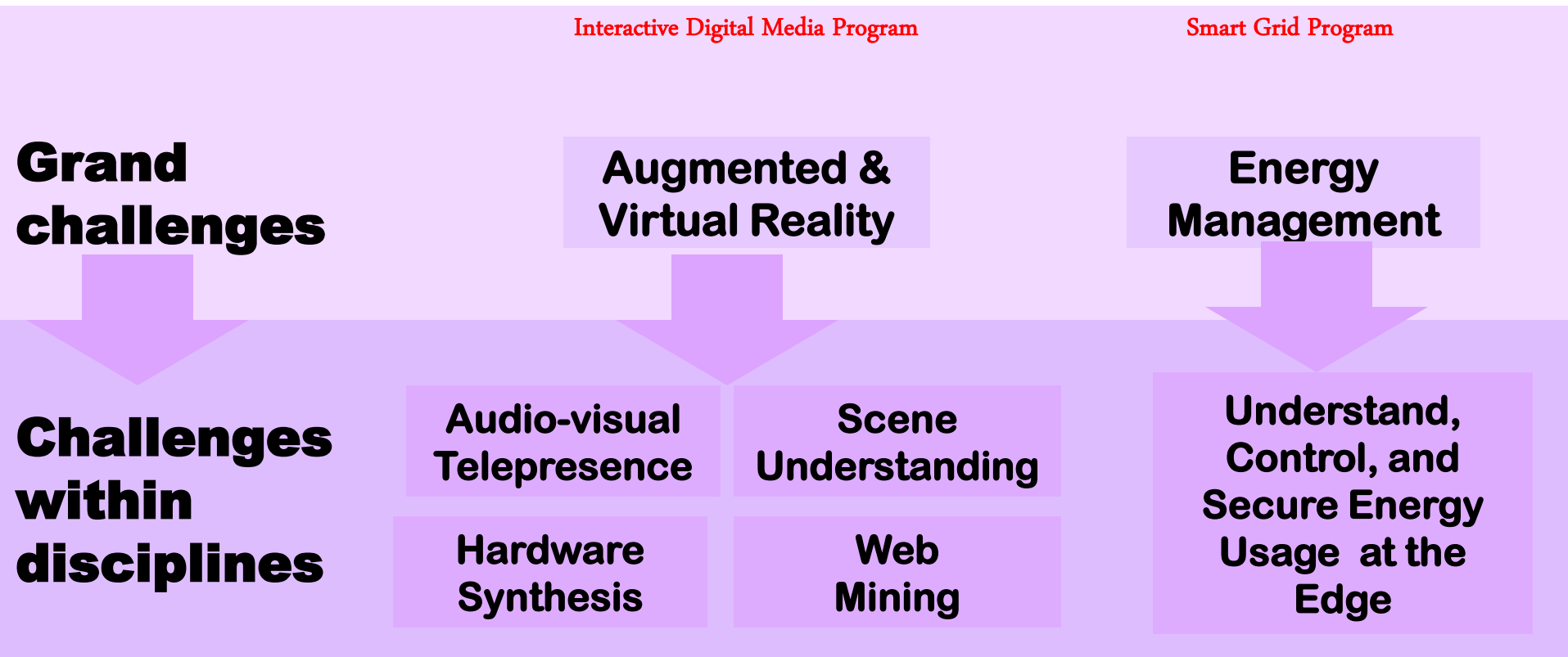
Who are we?

... and from MS/BS programs all over the world.



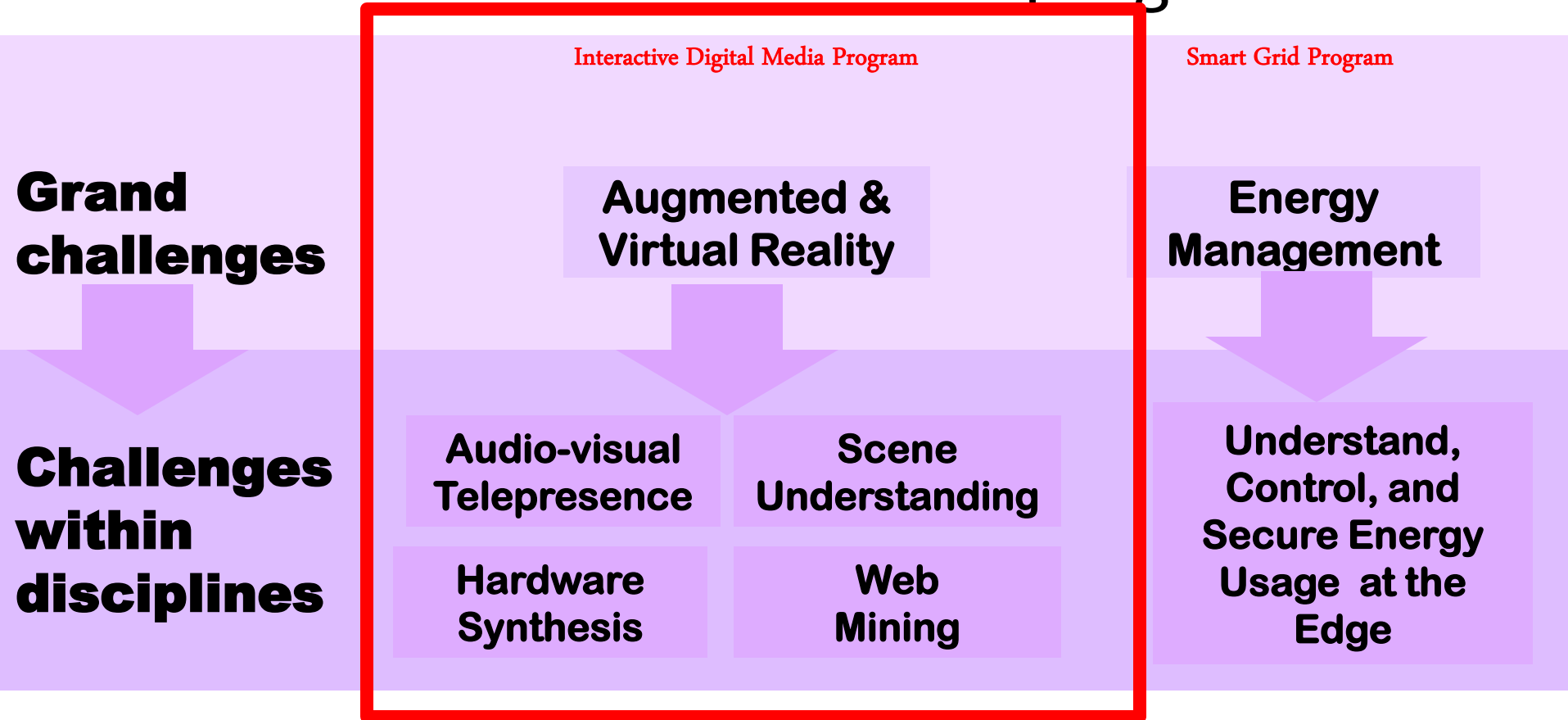
What do we do?

ADSC has two main research programs.



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ADSC has two main research programs.

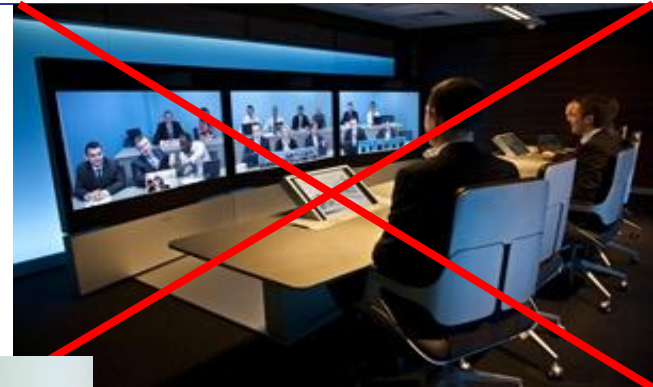


Audio-visual Telepresence

4
projects

Goal: Visual and auditory illusion of an arbitrary shared setting.

Challenges: Real-time performance with heterogeneous, local, low-cost commodity hardware (cameras, microphones, computers), public internet.



THE UNIVERSE



UR

Hardware Synthesis

Goal: hardware accelerator design without hardware expertise.

Challenges:

- GPU performance tuning is hard.
- FPGAs can't be satisfactorily synthesized from C-like code.

Solution approach:

- Automated hardware mapping that transforms the software code and explores a large hardware design space.

1
project



Scene Understanding

4 projects



Goals:

- Recognize people, objects, and their environment in a given scene.
- Locate people and objects, track and analyze their movements.
- Identify and interpret their actions, interactions, and activities.

Challenges:

- Camera motion vs. object motion.
- Difficult lighting conditions, scale, orientation.
- Blocked views.
- Different objects with similar appearance.
- Tracking objects across frames, cameras.



IDM Challenge 4

Web Mining

1 project

Goal: Augment reality with info about entities, mined from the web.

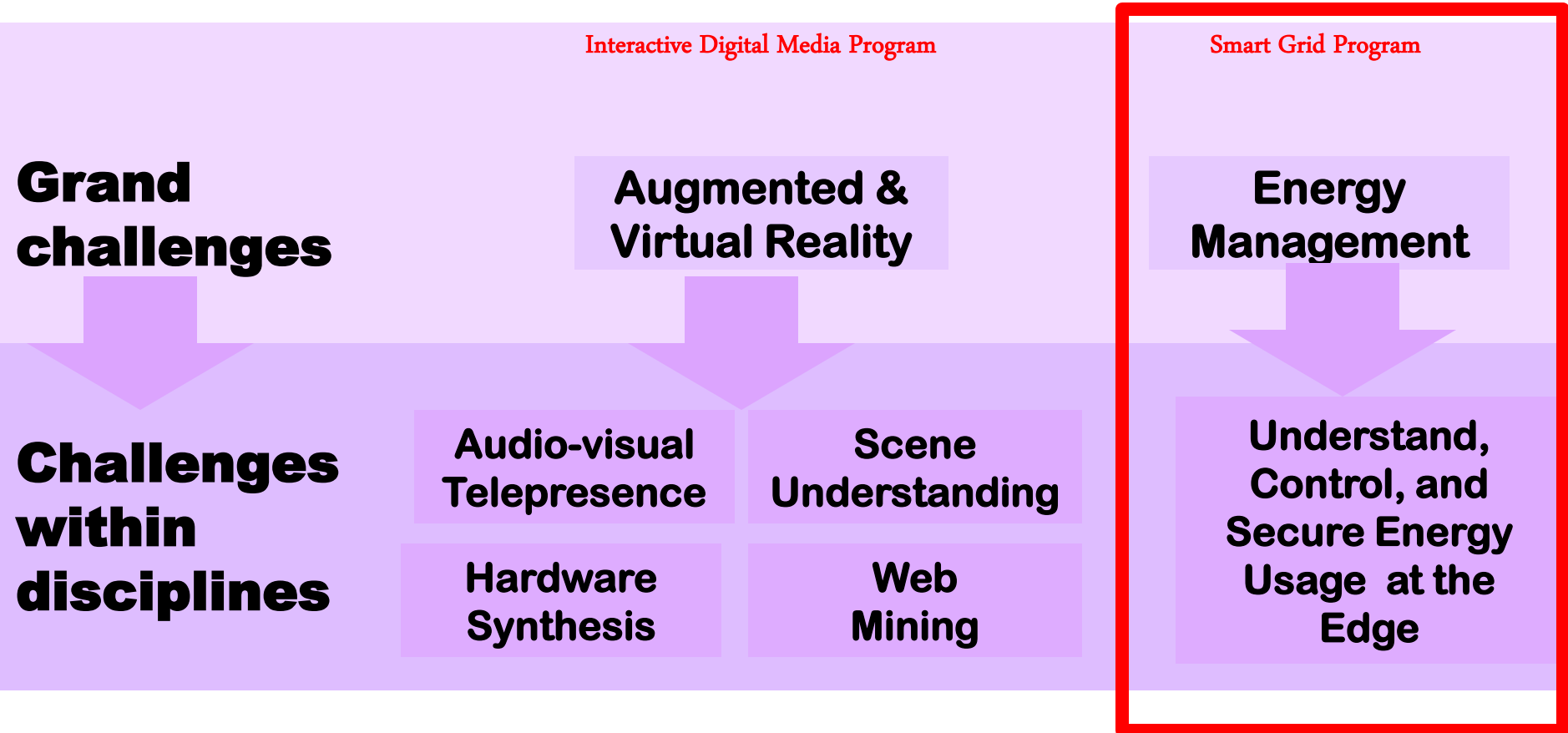


Challenges:

- **Aggregate** the best online sources for info about specific entities in a particular domain.
- **Extract** relevant info there, in any format.
- **Organize**-- reconcile, disambiguate, summarize, and present-- the collected information to present to users in a structured form.

What do we do?

ADSC has two main research programs.



Smart Grid Challenge

Understand, Control, Secure

3
projects

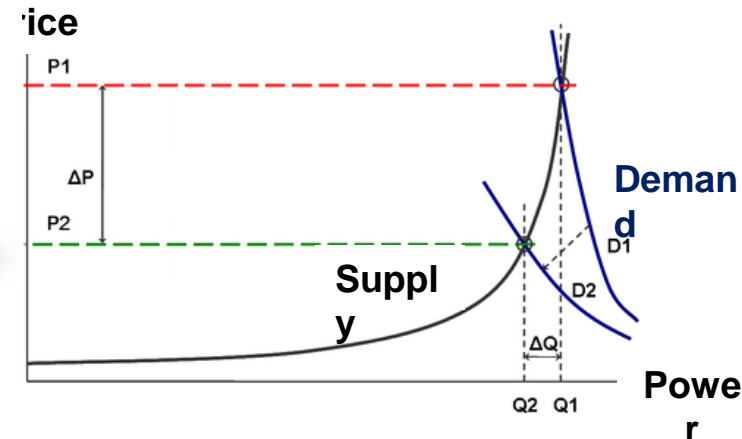
Goal: understand, control, & secure the smart grid's edge, so we can *push intelligence to the edge of the grid*

Challenges:

Understand: reliably understand detailed usage in real time, at low cost

Control: leverage that understanding to reliably enable consumer-friendly demand-response

Secure: generate, combine different kinds of security evidence in grid cyberphysical systems



What impact have we had?

Conference papers	47	Scientific Impact
Journal papers	31	
“Best Paper” awards & nominations	8	

Patent & trade secret applications	5	Economic Impact
Licenses	3	
Startups	4	

Scholarship Programs

1. ARAP

2. SINGA

3. SIPGA

1. ARAP for International enrolled graduate students

<http://www.a-star.edu.sg/Awards-Scholarship/Scholarships-Attachments/For-Graduate-PhD-Studies/A-STAR-Research-Attachment-Programme.aspx>

A collaboration between A*STAR and overseas partner universities to provide research opportunities at A*STAR Research Institutes and Consortia.

Duration:

Enrolled PhD students may spend **one to two years** at an A*STAR **Research Institute (including ADSC)** under the joint supervision of the staff of a A*STAR Research Institute and the advisor at home university.

- Monthly stipend of S\$2,500
- One-time airfare grant of S\$1,500
- One-time settling-in allowance of S\$1,000 (provided student spends at least 1 year at RI)
- Medical insurance
- Conference Allowance

For lists of RIs and their coordinators , refer to:

<http://www.a-star.edu.sg/Awards-Scholarship/Scholarships-Attachments/For-Graduate-PhD-Studies/A-STAR-Research-Attachment-Programme/A-STAR-Research-Institutes-and-Contacts.aspx>

2. SINGA Scholarship for International BS and MS graduates applying to PhD programs in S'pore applications from foreign countries

<http://www.a-star.edu.sg/Awards-Scholarship/Scholarships-Attachments/For-Graduate-PhD-Studies/Singapore-International-Graduate-Award.aspx>

Students will receive PhD training at their chosen lab at:

A*STAR Research Institutes (Including ADSC) or
NUS, NTU, and SUTD.

For list of research areas, refer to:

https://www.singa.a-star.edu.sg/theresearch_astar.php

Coverage:

- Full support for tuition fees for 4 years of PhD studies
- Monthly Stipend S\$2,000 and increased to S\$2,500 after passing the Qualifying Examination.
- Additional housing subsidy, if live off-campus, capped at S\$500 if the monthly rent exceeds S\$500/month
- One-time Airfare Grant of S\$1,500 Return Airfare
- One-time S\$1,000 Settling-in Allowance
- Medical Insurance
- Conference Allowance

Application Process and deadlines for SINGA

Submit application on-line at:

<https://sms.a-star.edu.sg/applicant/Login.aspx>

Deadlines: Two annual intakes with

deadlines of:

1 June for January intake

1 January for August intake

- **Propose up to 3 projects, supervisors, and degree awarding institutions**
- **Supporting documents** must be uploaded during your online application
- **Shortlisted candidates will be invited for interviews in Singapore**

APPLICATION FOR SINGAPORE INTERNATIONAL GRADUATE AWARD (SINGA)

Submit an online application for SINGA at <http://www.singa.a-star.edu.sg>

You will need the following softcopy documents and information with you before filling up the online form:

Compulsory

- Identity card/Passport
- A recent passport-sized photo in JPEG/PNG format
- University Academic Transcripts AND Degree Scrolls

Not compulsory, but good to include if available

- SAT I & II / GRE / IELTS / TOEFL / GATE results
- Awards
- Publications

Please check and ensure all data you have entered in the form is correct and accurate before you submit the application. Amendments to the application will not be possible after it is submitted. Only shortlisted candidates will be notified via email.

Be prepared to respond to the following:

What are your career aspirations? (maximum 3000 words)

Provide a description of your research project(s), experience(s), and achievement(s). (maximum 3000 words)

Proposed Research Area/Topic (maximum 3000 words)

Significance & Aims of Proposed Research Area/Topic (maximum 3000 words)

ESSAY QUESTIONS

Please provide us your personal statement why you think you deserve the Singapore International Graduate Award. Please limit your statement to 500 words.

SINGA Application, Cont'd

PROPOSED SUPERVISOR & RESEARCH PROJECT

(You may list down up to 3 project choices)



1st Choice

Institution A*STAR / NTU / NUS / Thematic Programme
RI / Faculty / Department
Supervisor's Name
Project Title
Project Description

2nd Choice

Institution A*STAR / NTU / NUS / Thematic Programme
RI / Faculty / Department
Supervisor's Name
Project Title
Project Description

3rd Choice

Institution A*STAR / NTU / NUS / Thematic Programme
RI / Faculty / Department
Supervisor's Name
Project Title
Project Description

ADSC Supervisors, Projects, & Degree Awarding Institutions for SINGA

The lists can be viewed at ADSC website

<http://adsc.illinois.edu/sites/default/files/images/SINGA%20Supervisors%27%20List%20update%20-%202020%20Sep%202013%20Sheet1.pdf>

OR at the A*GA website by clicking on the + sign on the left side of
Science and Engineering Research Council (SERC) tab
at

https://www.singa.a-star.edu.sg/theresearch_astar.php

and pulling down the lists for

+ Advanced Digital Sciences Centre (ADSC) ([Website](#))

By clicking on the + sign next to

- + **Smart Grid**
- + **Computational Architecture**
- + **Interactive & Digital Media**
- + **Computer Science**

3. SIPGA for International (BS/MS) enrolled students

Internship Program

(applying to Singapore from foreign countries)

<http://www.a-star.edu.sg/Awards-Scholarship/Scholarships-Attachments/For-Undergraduate-Studies/Singapore-International-Pre-Graduate-Award.aspx>

- For students in the later years of a Bachelor or Master level program **to build a pipeline for SINGA**
- Duration 3 months (MOM does not approve TEP for longer period or an extension)
- Stipend S\$1,500

To calculate Cost of Living in Singapore, refer to:

http://www.contactsingapore.sg/why_singapore/about_singapore/cost_of_living_calculator/

Application Procedure for SIPGA For all RIs

Browse A*STAR Research Institutes (RIs) web pages:

<http://www.a-star.edu.sg/Research/Research-Institutes-Capabilities/Browse-By-Research-Institutes.aspx>

and Contact RIs directly:

<http://www.a-star.edu.sg/Awards-Scholarship/Scholarships-Attachments/For-Undergraduate-Studies/Singapore-International-Pre-Graduate-Award/A-STAR-Research-Institutes-and-Contacts.aspx>

Internship applicants to ADSC for currently enrolled students who **will build a pipeline** to SINGA submit application on-line at <https://my.engr.illinois.edu/apply/>

Documents needed for SIPGA Nomination:

If qualified for SIPGA, ADSC will nominate applicant

- CV
- A copy of Passport
- English Translated Transcript
- Certificates
- Recommendation letter if any

ADSC's policy for overseas interns

- \$1,800 (for undergraduates)
 - \$2,200 (for Masters students)
 - \$2,600 (for PhD students) - do not qualify for SIPGA
-
- ADSC pays more to help cover lodging
 - ADSC reimburses economy return travel
 - ADSC reimburses insurance premium up to \$200

ADSC Employment Information at:

<http://adsc.illinois.edu/opportunities/adsc-employment-opportunities>

Submit applications on-line at:

<https://my.engr.illinois.edu/apply/index.asp>

Questions?



Undergraduate Research Opportunities, including joint supervision of senior projects with NUS, NTU, SUTD or SMU faculty and research attachment opportunities

SIPGA, SINGA, and ARAP

ADSC's research and options for A*GA student funding

Areas of study and program and financial support

Send an email to: scholarship@adsc.com.sg or mirarefi@illinois.edu