

National Satellite of Excellence in Design Science and Technologies for Secure Critical Infrastructure (NSoE DeST-SCI)

Information and Launch Session

Venue : SUTD Campus, LT 5 (building 2, level 5, 2.505)

Time : 3 pm

Date : 3 April 2019, Wednesday

3:00 pm	Welcome and Introductions
3:05 pm	Opening remarks [National Research Foundation]
3:15 pm	NSoE (DeST-SCI): Thrusts and proposal guidelines
3:35 pm	iTrust Laboratories
3:45 pm	Q&A

Information Session

National Satellite of Excellence [NSoE]

Design Science and Technology for Secure Critical Infrastructure [DeST-SCI]

iTrust Laboratories

Jianying Zhou, Co-Center Director, iTrust

Ivan Lee, Deputy Director, Cyber Security Technologies

Mark Goh, Senior Manager, iTrust Laboratories

April 3, 2019

<https://itrust.sutd.edu.sg/nsoe-destsci/>

**National Satellite of Excellence [NSoE]
Design Science and Technology for
Secure Critical Infrastructure [DeST-SCI]**

Jiaying ZHOU

Objectives

- A. Create a research program focused on the design of secure Critical Infrastructure.
- B. Enhance collaboration with selected local and international partners.
- C. Provide seamless and round the clock access to iTrust world-class Critical Infrastructure testbeds.
- D. Enhance Singapore's base of well trained personnel in the **design** and **operation** of secure Critical Infrastructure.

Focus

A. Impactful research

B. Industrial partnership

C. Technology transfer

Thrusts

A. Automation: Generation of anomaly detectors and command validators

B. Incidence Response: Forensics and recovery ← New

C. Attestation and Assessment

D. Digital Twinning: water and electric power ← New

E. Attack Prevention

F. Novel approaches for the of design secure CI

Topics

A list of topics under each thrust is available at the NSoE web site. PIs may browse this list to decide on the focus of their proposed research.

This list is not exhaustive and PIs may identify other topics relevant to DeST-SCI. The list can be found here - <https://itrust.sutd.edu.sg/nsoe-destsci/grant-2019/>

NSoE [DeST-SCI]: Duration and Funding

NSoE [DeST-SCI] duration: 3 Years. Start date: April 1, 2019

Award: \$13.2M

1st Grant call : Start date: April 3, 2019

NSoE: Funding Research Projects

Amount: up to \$800K

Any amount higher than the maximum above may be requested, but significant justification will be required.

Duration: 1 - 2.5 years

** Institutions may include 10% of the Total Direct Cost as Indirect Cost (Overheads)*

Proposal Timeline

Item	Date
First Grant call*	Wednesday, April 3, 2019
Submission closes	Tuesday June 4, 2019, 11:59pm (Singapore time)
Awards announcement	Monday July 15, 2019 (latest)
Project start date	Monday August 5, 2019

* A second grant call will likely to be in mid-2020.

Proposal Review Timeline

Date	Task to be completed
Tue June 4, 2019	First Grant call closed.
Mon June 10, 2019	Proposals to be checked for conformance to the guidelines. Proposals failing the checks will be sent back for revision or rejected.
Wed June 12, 2019	Proposals to be sent to members of the evaluation panel for review.
Tue June 25, 2019	Review received from members of the evaluation panel.
Fri July 5, 2019	Evaluation panel met; presentations by invited PIs completed*; awards recommended.
Mon July 15, 2019	Awards to be announced.

*Panel may recommend to invite selected PIs for clarifications regarding any aspect of the submitted proposal.

Proposal Review Criteria

1. Primary criteria

These criteria, elaborated in subsequent slides, are most significant and the evaluation panel will be asked to accord higher weight to these than to those in secondary criteria.

2. Secondary (other) criteria

While important, these criteria will be accorded lower weight than the primary criteria.

Primary Proposal Review Criteria

1. Technology contribution

Proposals must clearly articulate what technologies are to be developed and how such technologies will contribute to the design of new and/or legacy critical infrastructure for the benefit of Singapore.

2. Novelty

Proposals must articulate novelty of the proposed approach to technology development.

3. Technology demonstration plan

Proposals must clearly articulate a demonstration plan for the technologies to be developed. Demonstration on operational testbeds in iTrust is preferred, though not required, over demonstration in simulation environments.

Other Proposal Review Criteria

1. Technology transfer plan

- (a) Plan for technology transfer to Singapore's critical infrastructure.
- (b) Plan for startup.

2. Local collaboration

A plan for collaboration with industry and/or researchers in Singapore must clearly articulate why the collaboration is needed and how it will be implemented. It is recommended that proposals near the funding limit include local collaborator(s).

3. International collaboration

A plan for international collaboration must clearly articulate why the collaboration is needed and how it will be implemented.

PI Eligibility

- The Call is open to all organisations in the following three categories defined for the purpose of this Call:
 - a) academic institutions;
 - b) research institutions; and
 - c) public agencies.
- At least one Principal Investigator (PI) must be identified from each academic / research institution / public agency participating in the proposal, with one PI designated as Lead PI and the others as Co-PIs. The Lead PI must be a full-time researcher (or part-time with at least 75% appointment) at a publicly-funded Singapore based Institute of Higher Learning / Research Institution.

Proposal Submission

- a) Email to nsoe_destsci@sutd.edu.sg using your organisational email informing us of your intention to participate in this grant call (please do it early).
- b) You will receive a notification email from Microsoft CMT with your access details. Please change your auto-generated default password in Microsoft CMT.
- c) Login to Microsoft CMT to submit your proposal using the required template. Proposal template can be downloaded from <https://itrust.sutd.edu.sg/nsoe-destsci/grant-2019/>

Proposal Budget Guidelines

Ivan LEE and Mark GOH

Manpower categories

Research fellow

Research assistant

Programmer

Undergraduate student assistant

* EOM related expenses of PI and Co-PI are not fundable.

Equipment

Computers

Software

Hardware

Travel

Limited to \$6000/trip for PI, Co-PI and researchers in the project to attend a conference/workshop where a paper has been accepted. |

International collaboration

List the name and affiliation of each collaborator

Travel and local expenses for international collaborators;
entertainment expenses are not allowed. |

Testbed use

iTrust Labs mandates payment for the use of the testbeds. Dollars so received are used for iTrust Labs maintenance and management.

Usage of testbeds will be tracked for all projects.

Charges for the use of Trust testbeds [Tier 3]

Must be included for projects that plan to use the testbeds in iTrust Labs. Usage categories and cost are listed below. The charges are heavily **discounted** for all but casual categories.

Usage Category (Tier 3)**	Amount to be budgeted*	
	Per usage category	Per year
Casual: ad-hoc	\$500 / hr	Varies
Low: 4 hrs / day	\$1,445 per 4-hr block	\$375,700 (based on 260 working days)
Medium: 12 hrs / wk	\$4,000 per 12-hr block	\$208,000
High: 48 hrs / mth	\$13,330 per 48-hr block	\$159,960

*Please do not maximize your non-testbed use dollars at the expense of dollars budgeted for testbed use. Exceeding the number of hours will require the PI to make a request to NSoE director for an increase in the allocated budget.

* Value indicated here exclude GST. GST is chargeable at prevailing rate.

**Research Institutes/ Educational Institutes/ Hospitals/ Government and Public sector agencies/ Voluntary sector

Charges for the use of Trust testbeds [Tier 4]

Must be included for projects that plan to use the testbeds in iTrust Labs. Usage categories and cost are listed below. The charges are heavily **discounted** for all but casual categories.

Usage Category (Tier 4)**	Amount to be budgeted*	
	Per usage category	Per year
Casual: ad-hoc	\$400 / hr	Varies
Low: 4 hrs / day	\$1,155 per 4-hr block	\$300,300 (based on 260 working days)
Medium: 12 hrs / wk	\$3,200 per 12-hr block	\$166,400
High: 48 hrs / mth	\$10,665 per 48-hr block	\$127,980

*Please do not maximize your non-testbed use dollars at the expense of dollars budgeted for testbed use. Exceeding the number of hours will require the PI to make a request to NSoE director for an increase in the allocated budget.

* Value indicated here exclude GST. GST is chargeable at prevailing rate.

**Projects wherein the PI is a member of the SUTD faculty.

iTrust Laboratories

Mark GOH

iTrust Labs: Duration and Funding

Duration: 5 years

Grant: \$4M

Starting date: Feb 1, 2019

iTrust Labs: Objectives

- a) Support for the research and experimentation in the area of critical infrastructure such as NSoE
- b) Proof of Concept studies
- c) Attack scenario design and security assessment framework
- d) Contribution to educational programs
- e) Contribution to the fundamental protection of the Critical Infrastructure
- f) Contribution to the Critical Infrastructure internships
- g) Attack-Defense exercise for technologies validation

iTrust Laboratories: Critical Infrastructure Testbeds

Water Treatment (SWaT) 5g/min



Water Distribution (WADI)



Electric power generation, transmission, distribution, AMI. (EPIC) 72KVA



Motorized generators, Solar, Batteries

iTrust Laboratories: IoT Testbed





Question & Answer

Thank You!
