

Cyber-Hardware Forensics & Assurance Evaluation R&D Programme – R&D Grant Call (November 2019)

Overview of Programme and Grant Call

The Cyber-Hardware Forensics & Assurance Evaluation R&D Programme (CHFA) is funded by National Cyber Research & Development Programme (NCR) under National Research Foundation Singapore. Starting from May 2019 and ending in April 2024, this programme aims to explore and research on new methods in digital forensics to enable both investigative and counteractive abilities.

The techniques to be explored in this programme will be anchored at the hardware level, rather than pure software, as product hardware has a much longer lifetime, spanning several years. The goal of this programme would be to translate the research output into both techniques and technology and should contribute to investigative capabilities and for industrial R&D.

The R&D Grant Call focuses on seeking complementary and synergistic research to existing projects in its respective thrusts, which are as follows:

- **Thrust (i): Data Recovery via Advanced Failure Analysis Technique**
- **Thrust (ii): Computer Aided Data Analysis of Recovered Data**

In Thrusts (i) and (ii), the main activities are to conduct research to forensically analyse and recover data from physically damaged hardware in a time-efficient manner.

- **Thrust (iii): Research for Advanced Hardware Evaluation Techniques for Modern Systems with Security and Privacy Features**
- **Thrust (iv): Advanced Side-Channels to Evaluate Security and Privacy Features of Modern Processors**

In Thrusts (iii) and (iv), the main activities are towards developing methods to evaluate modern processors for security and privacy where the research in these thrusts will produce advanced hardware evaluation techniques to evaluate hardware for assurance.

To know more about each thrust, please visit the website <https://research.ntu.edu.sg/ortds/CHFA/>.

Possible Areas of Interests include:

- **Rapid Recovery Forensics R&D**
- **Evaluating Modern Processors and Hardware for Security, Privacy and Assurance**

Please note that the list is non-exhaustive and PIs may propose other topics which could be relevant to the programme.

For materials that were shared during the Grant Call Launch and Info Session (18 November) please download them here @ <https://research.ntu.edu.sg/ortds/CHFA/pages/CHFAGrantCall1-InfoSession.aspx#files>

Project Funding Specifications

Duration

1. The duration of each project is up to **3 years**.

Quantum

2. This grant will provide **10% IRC/overheads** above direct research costs for Singapore-based Institutes of Higher Learning and Research Institutions. The total quantum will not exceed **\$1,000,000 (inclusive** of 10% IRC/Overheads).

Expenditure Guidelines

3. Please refer to the list of fundable and non-fundable items outlined in **Appendix A**. The list may be subject to changes.

Eligibility

4. The grant call is open to all **Faculty and Principal Investigators (PIs)** from a publicly-funded Singaporean Institute of Higher Learning (IHL) or Research Institution (RI); where

Institutes of Higher Learning (IHLs):

- National University of Singapore (NUS)
- Nanyang Technological University (NTU)
- Singapore Management University (SMU)
- Singapore University of Technology and Design (SUTD)
- Singapore Institute of Technology (SIT)
- Singapore University of Social Sciences (SUSS)

Research Institutions (RIs):

- A*STAR Research Institutes/Centres/Consortia

5. Each proposal submission must have a Principal Investigator (PI) who is a full-time staff (or part-time with at least 75% appointment) at publicly-funded Singapore based IHL/RI. The PI and his research team mates must not have any outstanding report(s) from other national grants. The CVs of all members (PI, all Co-PIs and Collaborators) listed in the application form must be appended with the proposal submission. For required information in the CV, please refer to **Appendix B**.
6. Only research conducted in Singapore may be funded under the CHFA Programme. Researchers from Government and/or cybersecurity industry in Singapore are eligible to apply as collaborators. International researchers are welcomed as collaborators. Collaborators are not restricted to any category but are not eligible to receive any funding.
7. Proposals already funded by other funding agencies are not eligible for funding under this grant call.

Application for Funding

Submission

8. There are 4 files within the 'submission package': 1 application information (*this file*) and 3 templates:
 - I. CHFA - Annex C – Full Proposal (template)
 - II. CHFA - Annex D – Project Budget (template)
 - III. CHFA - Annex E – Project Performance Indicators (template)

The 3 templates must be completed; and where applicable, signed with relevant supporting documents attached.

Please note:

- For '*CHFA - Annex C – Full Proposal*', please submit a scanned signed copy as well as an editable *.docx file
 - All the 'Proposal ID' will be assigned and filled by CHFA.
9. All applications must be submitted to CHFA ***through your respective Research Office***. Any direct submissions will not be considered.

All submitted proposals by the Research Offices are deemed to have its contents verified and the submissions supported by your organizations. Please ensure your internal processes are followed.

Deadlines

10. All proposals must reach CHFA by 31 Jan 2020 (1200 hrs, Friday, Singapore Time)

Please abide to the ***internal submission deadline*** determined by your respective Research Offices.

Timelines

11. Grant Call opens: **18 Nov 2019**

Grant Call closes: **31 Jan 2020**

Award announcement: **No later than 1 Apr 2020**

Tentatively project starts on: **1 May 2020**

Evaluation Criteria

Criteria & Scoring

12.
 1. Potential Impact & Application Significance
 2. Comparative Advantage
 3. Rigour of Approach
 4. Novelty
 5. PI Track Record
 6. Budget & Utilization

Evaluation Panel

13.
 - PIs from CHFA
 - Representatives from CSA, MHA, MINDEF & NRF
 - External Reviewers

Enquires

Please email NCR_CHFA@ntu.edu.sg.

APPENDIX A

A. FUNDABLE DIRECT COSTS

A.1. Manpower Related Expenses

Type of Expenses	Allowable Costs
Salaries	<p>Basic salaries, and 13th month annual wage supplement (AWS) as well as employer's contribution to CPF on basic salaries and AWS of supportable personnel. Supportable personnel are defined as those who are (i) directly involved in the R&D project, (ii) full-time permanent employees of the companies/IHLs/RI and (iii) tax residents in Singapore.</p> <p>Fractional charging for staff costs based on time commitment to the project must be practised. Grant should support EOM costs and related benefits (as per employment contract) as long as it is in line with the consistency applied IHLs/RIs' HR policies.</p>

All other costs related to manpower / remuneration are excluded.

A.2. Equipment and Technical Software Related Expenses

Type of Expenses	Description
Equipment and software purchase	Only costs incurred in the purchase of new equipment approved by the NRF via the Grantor for the purpose of this grant can qualify.

All other costs will be excluded.

A.3. OOE – related expenses and Overseas Travel Related expenses

Type of Expenses	Description
Travel & Cost of Living Allowance (COLA)	<p>Travel and COLA for overseas conferences directly relevant to the research area outlined in the project and necessary to accomplish project objectives.</p> <p>All travel must align to the existing and consistently applied Company or IHL/RI's travel policies regardless of the source of funds.</p>

All other costs will be excluded.

B. NON-FUNDABLE DIRECT COSTS

B.1. EOM Related Expenses

Type of Expenses	Description
Principal Investigators/ Co-Investigators/ Programme Managers EOM Cost	Not allowable.
Staff Insurance	Not allowable unless they are incurred under an established and consistently applied policy of the Company or IHL/RI. Company or IHL/RI may be requested to certify that such payments are in accordance with its established policy or on the same terms as the other staff.
Overtime	Not allowable.
Unconsumed leave	Provision for unconsumed leave is not allowable.

Type of Expenses	Description
Student Assistants / Interns	<p>Not allowable for students who are recipients of existing awards (or stipends) or students who are not residents of Singapore.</p> <p>For IHL/RI, only full-time students enrolled in local institutes of higher learning qualify to be supported as a student assistant/ intern.</p>

B.2. Equipment Related Expenses

Type of Expenses	Description
General Policy	<p>No purchase of equipment is allowed unless specifically provided for in the grant and approved by NRF via Grantor.</p> <p>The procurement of such equipment must be made according to the formal established and consistently applied policies of the Company or IHL/RI.</p> <p>The invoices for all claims must be dated before the end of the Term.</p>
Cost of capital works and general infrastructure, general purpose IT and communication equipment, office equipment, and furniture and fittings	<p>Not allowable under direct costs, unless specifically provided for in the grant and approved by NRF via Grantor.</p> <p>Examples of such costs are computers, office productivity software, PDAs, mobile phones, photocopier machines, workstations, printers etc.</p>

B.3. OOE Related Expenses

Type of Expenses	Description
General Policy	<p>Not allowable for expenses that are <u>not directly related</u> to the Research.</p> <p>All procurement of such items must be made according to the formal established and consistently applied policies of the Company or IHL/RI.</p>
Visiting Professors/Experts	<p>Not allowable unless specifically provided for in the grant and approved by NRF via Grantor. The visiting professor must be identified and his/her contribution to the project must be clearly defined and described in the proposal.</p>
Audit Fees	<p>Not allowable. This includes both internal and external audit fees.</p>
Entertainment & refreshment	<p>Not allowable.</p>
Fines and Penalties	<p>Not allowable.</p>
Legal Fees	<p>Not allowable.</p>
Overhead Expenses	<p>Not allowable unless specifically provided for in the grant and approved by NRF via Grantor based on the nature of the research.</p> <p>This includes rental, utilities, facilities management, telephone charges, internet charges, etc.</p>

Type of Expenses	Description
Patent Application	<p>Not allowable.</p> <p>This includes patent application filing, maintenance and other related cost.</p>
Professional Membership Fees	<p>Not allowable.</p> <p>This applies to PI and Co-Investigators as well as all research staff funded from the grant.</p>
Software	<p>Not allowable under director cost unless specifically provided for in the grant and approved by NRF via Grantor.</p>
Professional Fees (including fees to consultants)	<p>Not allowable unless specifically provided for in the grant and approved by NRF.</p>
Staff retreat	<p>Not allowed.</p>

B.4. Overseas Travel Related Expenses

Type of Expenses	Description
General policy	<p>Not allowable unless specifically provided for in the grant and approved by NRF via Grantor.</p> <p>All travel must be by Economy Class airfare and for all other travel-related claims be aligned with existing and consistently applied institutions' travel policies regardless of the source of funds. Support for the total travel expenses is capped at S\$18,000 per year.</p>

Meeting Overseas Collaborator	Not allowable for students.
Local and Overseas Conferences	<p>Not allowable, unless directly required for the research and specifically provided for in the grant and approved by NRF via Grantor. Conference participation should be directly relevant to the research area outlined in the project and necessary to accomplish project objectives.</p> <p>Not allowable for students, unless they are PhD students who are presenting papers for the project.</p> <p>Not allowable for collaborators.</p> <p>Overseas travel is capped at S\$6,000 per PI per trip, capped at S\$18,000 per year (for the entire project).</p>

For any cost items that are not listed above, research institutions should consult NRF through Grantor, as prior approval will be required.

B.5. Research Scholarship

Type of Expenses	Description
General policy	Not allowable.
Undergraduate Stipend and Tuition Support	Not allowable.

APPENDIX B

C. CV FORMAT

Each CV should start on a fresh page and limited to 2 pages (Calibri font size 12, single line spacing). Please indicate "N.A." beside the label field if the required information is not applicable and note that CHFA will not be responsible for any missing information not provided in the CVs.

- Name
- Title
- Office mailing address
- Email
- Contact number
- Current position (please provide full details, e.g. primary appointment, joint appointments; other academic appointments including those outside of Singapore).
- Percentage of time spent in Singapore every year for the current position (if applicable)
- Employment history
- Academic qualifications (indicate institution's name and year degree awarded)
- Research interests
- List of up to 10 most relevant publications (including 'in-press' publications, regardless of acceptance/published date of the publications)
- Patents held (related or unrelated to the study), and/or Scientific Awards, if any