**E1 Budget Justification**

**Year 1 (2017)**

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| **Description** | **Cash** | **Justification** |
| **Personnel** |  |  |
| Research Associate – Computer Science (Level B3, 1.0 FTE) | 139,595 | This Computer Science Research Associate will need to have overall technical oversight of this project. It needs to be a relatively senior postdoctoral appointment because of the range of interdisciplinary research expertise in software engineering, human computer interaction and mathematics required. In particular, prior expertise in the Extempore programming language and environment would be valued for this position and would warrant the higher level appointment. |
| Research Associate – Mathmatics (Level B1, 1.0 FTE) | 122,573 | This Mathematics Research Associate will need to have specialist expertise in the area of sparse grids and uncertainty quantification. Research experience in the engineering of substantial modelling software will also be expected. Level B1 is appropriate for a beginning post doc. |
| PhD/HDR stipend – Computer Science | 25,861 | The Computer Science PhD project will be primarily concerned with methodological aspects of live-coding in the software engineering process. The project will start by building mock disaster response game scenarios and then conducting experiments with prototype software and humans playing these game scenarios. As the main software suite comes together these scenarios will become more realistic. We will need an applicant who has experience in live programming, a specialised skill. |
| PhD/HDR stipend – Mathematics | 25,861 | The Mathematics PhD project will be primarily concerned with flood-surge modelling. At present our major expertise is in tsumami modelling with bathymetry data. This project will focus on down-stream surge modelling and will model forcing functions from disaster swell phenomena. |
| **Travel** |  |  |
| Domestic conference - computer science | 1,500 | ASEC2017 is the paramount software engineering conference in Australia. It provides an excellent venue for us present the results of our research. Costs are based on registration fee of $850, airfare of $650. Accommodation will be paid by ANU contribution of $750. |
| Domestic Conference - mathematics | 1,500 | Modsim2017 is the paramount modelling and simulation conference in Australia. It provides an excellent venue to present the results of our research. Costs are based on registration fee of $850, airfare to Tasmania of $650. Accommodation will be paid by ANU contribution of $750. |
| International conference - computer science | 5,000 |  |
| International conference - mathematics | 5,000 | SIAM CSE 2017 is the main international conference for the presentation of research in computational science and engineering. Costs based on registration $600, travel (to US) $3000, accommodation $1000, food and incidentals $400. |
| **Equipment** |  |  |
| Data server | 2,000 | We will need to have a server to manage the large amount of data that we will collect. A typical machine is the Dell 462-8700 Precision Tower 5810 Workstation features 3.5 GHz Intel Xeon E5-1620 v3 Processor, 16GB of 2133 MHz DDR4 ECC RDIMM RAM, quoted as $2,622 inclusive of GST. |
| Video cameras | 1,500 | We need 3 video cameras to film human experiments, for instance, GOPRO - 8MP - HERO+ LCD – CHDHB-101, quoted as $450 plus incidentals. |
| Video editing software | 1,000 | We will need at least 2 licences for professional video editing software such as Final Cut Pro. Quote $500/licence. |

**Year 2 (2018)**

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| **Description** | **Cash** | **Justification** |
| **Personnel** |  |  |
| Research Associate – Computer Science (Level B3, 1.0 FTE) | 139,595 | This Computer Science Research Associate will need to have overall technical oversight of this project. It needs to be a relatively senior postdoctoral appointment because of the range of interdisciplinary research expertise in software engineering, human computer interaction and mathematics required. In particular, prior expertise in the Extempore programming language and environment would be valued for this position and would warrant the higher level appointment. |
| Research Associate – Mathmatics (Level B1, 1.0 FTE) | 122,573 | This Mathematics Research Associate will need to have specialist expertise in the area of sparse grids and uncertainty quantification. Research experience in the engineering of substantial modelling software will also be expected. |
| PhD/HDR stipend – Computer Science | 25,861 | The Computer Science PhD project will be primarily concerned with methodological aspects of live-coding in the software engineering process. The project will start by building mock disaster response game scenarios and then conducting experiments with prototype software and humans playing these game scenarios. As the main software suite comes together these scenarios will become more realistic. |
| PhD/HDR stipend – Mathematics | 25,861 | The Mathematics PhD project will be primarily concerned with flood-surge modelling. At present our major expertise is in upstream tsumami modelling with bathymetry data. This project will focus on down-stream surge modelling and will model forcing functions from disaster swell phenomena. |
| **Travel** |  |  |
| Domestic conference - computer science | 1,500 |  |
| Domestic Conference - mathematics | 1,500 | CTAC2018 is the paramount computational science conference in Australia. It will provide an excellent venue to present the results of our research. Costs are based on registration fee of $850, airfare to Tasmania of $650. Accommodation will be paid by ANU contribution of $750. |
| International conference - computer science | 5,000 |  |
| International conference - mathematics | 5,000 | SIAM UQ 2018 is the main international conference for the presentation of research in uncertainty quantification. Costs based on registration $600, travel (to US) $3000, accommodation $1000, food and incidentals $400. |

**Year 3 (2019)**

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| **Description** | **Cash** | **Justification** |
| **Personnel** |  |  |
| Research Associate – Computer Science (Level B3, 1.0 FTE) | 139,595 | This Computer Science Research Associate will need to have overall technical oversight of this project. It needs to be a relatively senior postdoctoral appointment because of the range of interdisciplinary research expertise in software engineering, human computer interaction and mathematics required. In particular, prior expertise in the Extempore programming language and environment would be valued for this position and would warrant the higher level appointment. |
| Research Associate – Mathmatics (Level B1, 1.0 FTE) | 122,573 | This Mathematics Research Associate will need to have specialist expertise in the area of sparse grids and uncertainty quantification. Research experience in the engineering of substantial modelling software will also be expected. |
| PhD/HDR stipend – Computer Science | 25,861 | The Computer Science PhD project will be primarily concerned with methodological aspects of live-coding in the software engineering process. The project will start by building mock disaster response game scenarios and then conducting experiments with prototype software and humans playing these game scenarios. As the main software suite comes together these scenarios will become more realistic. |
| PhD/HDR stipend – Mathematics | 25,861 | The Mathematics PhD project will be primarily concerned with flood-surge modelling. At present our major expertise is in upstream tsumami modelling with bathymetry data. This project will focus on down-stream surge modelling and will model forcing functions from disaster swell phenomena. |
| **Travel** |  |  |
| Domestic conference - computer science | 1,500 |  |
| Domestic Conference - mathematics | 1,500 | Modsim2019 is the paramount modelling and simulation conference in Australia. It will provide an excellent venue to present the results of our research. Costs are based on registration fee of $850, airfare of $650. Accommodation will be paid by ANU contribution of $750. |
| International conference - computer science | 5,000 |  |
| International conference - mathematics | 5,000 | SIAM CSE 2019 is the main international conference for the presentation of research in computational science and engineering. Costs based on registration $600, travel (to US) $3000, accommodation $1000, food and incidentals $400. |