Schedule – Research Project

This Schedule is issued pursuant to and shall form part of the Master Student Sponsorship Agreement between IRL and the University dated [*date*] and relating to IRL's contract with the Ministry of Business, Innovation and Employment number C08X01208 – Fast physics-based fracture for visual effects.

Research	**Computational fracture mechanics**
Start Date	Unknown (tentative: 1 April 2013)
End Date	Unknown (tentative: 30 March 2014)
Student	[*name of Student and contact details including address, telephone number, email*]
Supervisor	Dr Kumar Mithraratne p.mithraratne@auckland.ac.nz ph 09 3737599 xtn 83011
Deliverables and deliverable dates	
	Parallel implementation of peridynamics (1 July 2013)
	Algorithms for transition between peridynamics and material point method (1 March 2014)
Fees (NZD)	$30,000 plus GST payable as follows: ($10,000 x 3 instalments)
Expenses	Nil
Location	Auckland Bioengineering Institute, 70 Symonds Street, city Campus, University of Auckland, Auckland.
Reports	Weekly written progress report, quarterly written technical report, well documented source code for any software written by the student.

Variations	The General Terms of the contract are varied as follows: Nil

Signed by University of Auckland	Signed by Industrial Research Limited
Signature	Signature
Name of authorised signatory	Name of authorised signatory
Position	Position
Date	Date

Schedule – Research Project

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Research	**Reduction of model size**
Start Date	Unknown (tentative: 1 April 2013)
End Date	Unknown (tentative: 30 March 2014)
Student	[*name of Student and contact details including address, telephone number, email*]
Supervisor	Dr Kumar Mithraratne p.mithraratne@auckland.ac.nz ph 09 3737599 xtn 83011

Deliverables and deliverable dates

	Parallel implementation of rigid body dynamics code (1 December 2013)
	Incorporation of rigid body dynamics in deformable mechanics (material point method) code (1 March 2014)
Fees (NZD)	$30,000 plus GST payable as follows: ($10,000 x 3 instalments)
Expenses	Nil
Location	Auckland Bioengineering Institute, 70 Symonds Street, city Campus, University of Auckland, Auckland.
Reports	Weekly written progress report, quarterly written technical report, well documented source code for any software written by the student.

Variations	The General Terms of the contract are varied as follows: Nil

Signed by University of Auckland	Signed by Industrial Research Limited
Signature	Signature
Name of authorised signatory	Name of authorised signatory
Position	Position
Date	Date

Schedule – Research Project

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Research	**Material models and fracture mechanics**
Start Date	Unknown (tentative: 1 October 2013)
End Date	Unknown (tentative: 30 September 2014)
Student	[*name of Student and contact details including address, telephone number, email*]
Supervisor	Dr Kumar Mithraratne p.mithraratne@auckland.ac.nz ph 09 3737599 xtn 83011

Deliverables and deliverable dates

	Material models for fracture simulation of anisotropic materials (01 April 2014)
	Incorporation of fragmentation in peridynamics/material point method code (30 September 2014)
Fees (NZD)	$30,000 plus GST payable as follows: ($10,000 x 3 instalments)
Expenses	Nil
Location	Auckland Bioengineering Institute, 70 Symonds Street, city Campus, University of Auckland, Auckland.
Reports	Weekly written progress report, quarterly written technical report, well documented source code for any software written by the student.

Variations	The General Terms of the contract are varied as follows: Nil

Signed by University of Auckland	Signed by Industrial Research Limited
Signature	Signature
Name of authorised signatory	Name of authorised signatory
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Date	Date

Schedule – Research Project

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Research **for model size reduction**	**Homogenized material models and transitioning**
Start Date	Unknown (tentative: 1 October 2013)
End Date	Unknown (tentative: 30 September 2014)
Student	[*name of Student and contact details including address, telephone number, email*]
Supervisor	Dr Kumar Mithraratne p.mithraratne@auckland.ac.nz ph 09 3737599 xtn 83011
Deliverables and deliverable dates	
	Homogenization methods for simplification of material models (10 January 2014) Transitioning algorithms for moving from deformable to rigid body mode (30 September 2014) Simulations for extracting heuristics from simulations and comparison with high-speed photography data (30 September 2014)
Fees (NZD)	$30,000 plus GST payable as follows: ($10,000 x 3 instalments)
Expenses	Nil
Location	Auckland Bioengineering Institute, 70 Symonds Street, city Campus, University of Auckland, Auckland.
Reports	Weekly written progress report, quarterly written technical report, well documented source code for any software written by the student.

Variations	The General Terms of the contract are varied as follows: Nil

Signed by University of Auckland	Signed by Industrial Research Limited
Signature	Signature
Name of authorised signatory	Name of authorised signatory
Position	Position
Date	Date