## Project Interim Progress Report(Rapport d’avancement de project intérimaire)July 1, 2016 - January 31, 2017Please submit by January 16, 2017(Attn: Joanne O’Connor management@nserc-canrimt.org)

## Instructions

*This progress report, updated milestones**and the Form 300 are required as a condition of research funding support from the sponsors of the NSERC CANRIMT.* ***Please report for activity in the current reporting period only.***

**SUMMARY**

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| **THEME V: Integration of Innovative Technologies into Virtual and Physical Platforms**  | **Leader/ Chef:** *(Y. Altintas )* |
| **PROJECT V.I:** **Integration of Digital Process Models to UBC MACHPRO Virtual Machining Platform** | **Leader/ Chef:**  |
| **PROJECT DURATION/DURÉE DU PROJET : July 1, 2016 to January 31, 2021** |
| **STATUS/STATUT:** *(****Milestones*** *to be updated by each Project Leader)* |
|  **Ahead of Schedule** |  | **On Schedule** | **X** |  **Delayed** |  | **Cancelled** |  |

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| **PROJECT DESCRIPTION/ DESCRIPTION DU PROJECT** (*Brief description in point form, including role of project in Theme.)* |
| The machining algorithms with complex kinematics and process dynamics, such as gear hobbing, orbital drilling, thread turning, and mill-turn operations to be developed in Theme I will be integrated to MACHPRO. |

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| **PROJECT OBJECTIVES & METHODOLOGY/ OBJECTIFS DU PROJET & MÉTHODOLOGIE** *(Include alignment with Network objectives.)* |
| **The objective of this integration project is to bring all research algorithms under a common platform, the virtual machining systems (CUTPRO, MACHPRO) developed at UBC. Each university/partner will have its own intellectual property, and UBC will open them sockets to plug their algorithms to transfer to industry.**  |

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| **1. RESEARCH TEAM/ ÉQUIPE DE RECHERCHE** *(Summary for the current reporting period)* |

**1a: Research Personnel (Supervisors, Co-Supervisors, Collaborators)/
Personnel de recherche**

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| *Name, given name/Nom., prénom* | *Organization/Organisation* | *Sup./Co-Sup./* *Collaborator* | *E-mail/Courriel* | *Phone No./Téléphone* |
| Altintas, Yusuf | UBC | Supervisor | altintas@mech.ubc.ca | 604-822-5622 |

**1b: Students, Postdoctoral Fellows, Research Assist./
Assoc./Eng., Technical/Professional, Guests** *(from outside Province; from outside Canada)***/
Étudiants, Boursier de recherches postdoctorales, assistants, techniciens et invites** *(invite hors Province; hors Canada)*

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| *Name, given name/Nom., prénom* | *Position* | *Organization/Organisation* | *Name/Nom.(S) or /ou (C)\** | *Start/Début* | *End/ Fin* | *CANRIMT Salary/Moincl ben.* | *Extern.fundingamount* | *Externfundingsource* |
| **Ramon Kailly** | **Research Engineer** | **UBC** |  | **Nov. 1, 2016** |  |  |  |  |
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***\*(S) – Supervisor
 (C) – Co-Supervisor***

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|  **TOTAL #** | **BASc** | **MASc/** **M.Eng.** | **Ph.D.** | **PDF** | **Res. Asst.** | **Res. Assoc.** | **Res. Eng.** | **Tech./ Prof.** | **Guests/outside Province** | **Guests/outside Canada** |
| **1** |  |  |  |  |  |  | **1** |  |  |  |

**1c: Partners & Contributions/
Partenaires et Contributions**

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| *Organization /Organisation* | *Acronym/Acronyme* | *Contact*  | *Cash/Espèce* | *In-Kind/ Nature* | *Overhead/Frais généraux* | *Total* |
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| **2. RESEARCH PLAN FOR THE CURRENT PERIOD/PLAN DE RECHERCHE POUR LA PÉRIOD ACTUELLE** *(Please list both the technical objectives, methodologies and milestones as stated in the previous report.)* |
| **Research engineer (Ramon Kalli ) was hired in November 1, 2016 and he has been learning the architecture of CUTPRO - MACHPRO software system.**  |

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| **3. ALIGNMENT OF RESEARCH PROJECT WITH NETWORK OBJECTIVES/ALIGNEMENT DU PROJET DE RECHERCHE AVEC LES OBJECTIFS DU RÉSEAU***( Please comment on the alignment of the research project with the overall Network objectives.)* |
| **The focus of Theme V is to integrate the research algorithms into the commercial system (MACHPRO) which can be used by industrial partners. This is the technology transfer component of the network.**  |

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| **4. PROBLEMS and RESOLUTIONS/ PROBLEMES ET SOLUTIONS PROPOSÉES***( Please summarize any problems arising during the current reporting period and their resolution or plans for resolution.)* |
| *Problem/ Problème: None**Resolution / Résolution:* |

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| **5. RESEARCH PROGRESS and RESULTS/ PROGRÈS DE LA RECHERCHE et RESULTATS:***(Summarize progress and results below.)* |

**5a: MILESTONES/ÉTAPES**
*Summarize progress on milestones – including % completed – as outlined in the Research Plan for the current reporting period and any modifications since the last reporting period.* *(Milestones document also to be updated for each project.)*

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| **MILESTONE/ ÉTAPE:** |
| **Progress:****Modifications:** |
| **% Completed/ Rempli** | **% Completed** |
| **Orbital drilling** | **10** |
| **Threading** | **10** |
| **Temperature prediction** | **0** |
| **Mill turn operations** | **0** |
| **Gear machining** | **0** |
| **Composite machining data base** | **0** |
| **Composite drilling simulations** | **0** |
| **Tool coating data base** | **0** |

Since the research has just started, the researchers have not released any algorithm yet for the integration.

**5b: PUBLICATIONS and PRESENTATIONS / PUBLICATIONS ET PRESENTATIONS**

*Please list all publications directly arising from Network-funded research during the current period. Do not include abstracts.*

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| ***A: REFEREED CONTRIBUTIONS - ARTICLES****Include articles in refereed publications – please specify whether the article has been submitted (S), accepted (A) or published (P).* |
| Last Name, Initial | *Year* | *Title, Journal, Volume* | *Status* |
|  |  |  |  |
| ***B: REFEREED CONTRIBUTIONS - OTHER****Include papers in refereed conference proceedings, letters, notes, communications, review articles, monographs, books, book chapters and government publications.* |
| Last Name, Initial | *Year* | *Description* | *Status* |
|  |  | Conference Title, Location and Date (Status: Invited, Not invited) |  |
|  |  | Journal/Book/Publication Title (Status: S-submitted; A-accepted; P-published) |  |
| ***C: NON-REFEREED CONTRIBUTIONS****Include papers in non-refereed conference proceedings, papers, letters and review articles.* |
| Last Name, Initial | *Year* | *Description* |
|  |  | Conference Title, Location and Date  |
|  |  | Journal/Book/Publication Title  |
| ***D: SPECIALIZED PUBLICATIONS - PRESENTATIONS****Include theses, presentations, industrial/technical reports, internal reports, discussions of abstracts and symposium records.* |
| Last Name, Initial | *Year* | *Description* |
|  |  | Thesis or Conference Title, Location and Date  |
|  |  | Journal/Book/Publication Title  |
| ***E: PUBLICATIONS – Not originally funded by NSERC CANRIMT but continuing or completed with Network funding***  |
| Last Name, Initial | *Year* | *Description/Title* ***(include start date of NSERC CANRIMT funding)*** |
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| ***F: PUBLICATIONS –Not funded by NSERC CANRIMT but related to the Network research focus***  |
| Last Name, Initial | *Year* | *Description/Title* |
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**5c: PATENTS and LICENSES/ BREVETS ET LICENSES**

*Non-disclosure agreements signed, patent applications filed, patents issued, copyrights, licenses under negotiation, licenses granted, etc.*

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| *Category* | *Owner* | *Description* |
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**5d: OTHER COMMUNICATIONS, AWARDS/ AUTRES COMMUNICATIONS, PRIX**

*Provide information on additional communications related to your work, such as awards and distinctions, news stories, interviews, public forums, press releases, etc. for the current reporting period (please provide copies or links.)*

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| *Name, given name/Nom, prénom* | *Details* | *Date* | *Link or copy attached* |
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| **6. TRAINING/ FORMATION** *(Describe the extent of cross-network and partner involvement in training for the current reporting period.)* |
| **Research engineer is trained by the software engineer Byron Reynolds and supervised by Mustafa Kaymakci at daily activities. They all report to Prof. Altintas for direction. All engineers work closely with graduate students who conduct the basic research, and explain their algorithms to research engineers.**  |

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| **7. RESEARCH PLAN FOR NEXT 6 MONTHS/ PLAN DE RECHERCHE POUR LES 6 PROCHAINS MOIS***(Describe Planned Research Activities for the next 6 month period and include any modifications made during the current reporting period.); also please list both the technical objectives and milestones.)* |
| **Integrate orbital drilling and threading to CUTPRO** |

**8. OPTIONAL – Comments, Questions and/or Feedback/
OPTION – Commentaires, questions et/ou des commentaires**

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| *Include any supplemental comments or questions pertaining to the Network here.* |
| Began work on developing a software application for comparing MACHPro data with measured data from a machining center. The data will be displayed in a 3D chart inside a user interface. The data will be obtained from the machining center in real-time and compared to the simulated data. |

**9. NETWORK EVENTS ATTENDED or SUGGESTIONS /
ÉVÉNEMENTS RÉSEAU ONT ASSISTÉ ou SUGGESTIONS**

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| *Please list any Network-related events attended and include comments and suggestions for events which may be helpful and informative for Network members to attend in future.* |
| *Event* | *Comments/Suggestions* |
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