

YEAR 8 – PROJECT PROPOSAL		
Title: 8a.019.JYU_PoC for Statistical modeling and visualization of human cognition and strategic business data (STRATOS) (2 Workpackages)		Project ID: 8a.019.JYU 8a.019.JYU.1 (Work Package 1) 8a.020.JYU.2 (Work Package 2)
Today's Date: March 6, 2019	Estimated Start Date: August 1, 2019	Type: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuing
Principal Investigator: Pekka Abrahamsson	University: University of Jyväskylä (JYU)	Email: pekka.abrahamsson@jyu.fi
Other Project Participants: <ul style="list-style-type: none"> • Dr. Hadi Ghanbari, post-doc, researcher • Kai-Kristian Kemell, PhD student, researcher • Juhani Risku, PhD student, researcher • Joonas Himmanen, researcher • Anniina Ojalainen, researcher 		
Project Description: <ul style="list-style-type: none"> • Develop models for the operationalization of human cognition by means of external stimuli and behavioral responses • Identify core metrics that play central role in human cognitive-behavior such as facial (micro/macro) expressions, cognition and workload, motivation, attention, arousal and valence. Objective is to improve workplace interaction performance. • Organize and collect the key available strategic business metrics and means to collect them for improved organizational performance. • Use ML to make sense out of the data • Use ethically aligned design (EAD) principles to implement the PoC • In the PoC phase, we experimentally showcase the results in a real working environment with a prototype (business data case) and a sensor setup (human cognition case) 		
Experimental Plan: <ul style="list-style-type: none"> • In both cases (human cognition and business data) we follow the similar experimental setup: Prepare the data, choose the candidate Machine Learning models for the cases, train the models and evaluate the fit with the real-world case, tune the parameters to provide better fit. 		
Related Work: Henry Edison, Xiaofeng Wang, Ronald Jabangwe, Pekka Abrahamsson: Innovation Initiatives in Large Software Companies: A Systematic Mapping Study. Information & Software Technology 95: 1-14 (2018) Pekka Abrahamsson, Jan Bosch, Sjaak Brinkkemper, Alexander Mädche: Software Business, Platforms, and Ecosystems: Fundamentals of Software Production Research (Dagstuhl Seminar 18182). Dagstuhl Reports 8(4): 164-198 (2018) Daniel Graziotin, Fabian Fagerholm, Xiaofeng Wang, Pekka Abrahamsson: What happens when software developers are (un)happy. Journal of Systems and Software 140: 32-47 (2018) Fabian Fagerholm, Marko Ikonen, Petri Kettunen, Jürgen Münch, Virpi Roto, Pekka Abrahamsson: Performance Alignment Work: How software developers experience the continuous adaptation of team performance in Lean and Agile environments. Information & Software Technology 64: 132-147 (2015)		
How this project is different: <ul style="list-style-type: none"> - Human cognition and performance, and business strategy data present new domains for Machine Learning applications - Ethics viewpoint and EAD taken into account 		Milestones for Year 1: <u>6 months:</u> <ul style="list-style-type: none"> • Data phase complete <u>9 months:</u> <ul style="list-style-type: none"> • ML selected and trained

- Participating companies are SMEs	<u>12 months:</u> • PoC ready for initial tests										
Deliverables for Year 1: <ul style="list-style-type: none"> PoC environment Data definition, architecture and policy Ethical analysis Experiment results 	Proposed Budget for Year 1: <table> <tr> <td>Personnel</td> <td>\$55.000</td> </tr> <tr> <td>Overhead</td> <td>\$ 96.500</td> </tr> <tr> <td>Other (travel)</td> <td>\$ 32.500</td> </tr> <tr> <td>Other (Material, equipment, services)</td> <td>\$ 31.000</td> </tr> <tr> <td>Total</td> <td>\$ 215.000</td> </tr> </table>	Personnel	\$55.000	Overhead	\$ 96.500	Other (travel)	\$ 32.500	Other (Material, equipment, services)	\$ 31.000	Total	\$ 215.000
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How this Project may be transformative? The project presents ambitious targets of modeling human cognition and business strategy data. It aims at producing a tangible Proof-of-Concept as an outcome that can be directly benefited by the participating companies.											
Potential IAB member benefits: New partners present expertise, know-how and research results from interesting application domains.											

Year 8 – IAB Research Focus Areas		Project Collaboration	
X	Visualization & Data Analytics		Drexel University
X	Artificial Intelligence		Stony Brook University
X	Ethics	X	Tampere University (University of Jyväskylä (JYU))
	Cybersecurity		University of North Carolina at Charlotte
X	Human Centric, Social Computing		University of Louisiana at Lafayette
	Other		University of Virginia

Proposed IAB Project Sponsors <Insert bullet list> •

(For Site Director Use Only)

Evaluation Score	Criteria Description	Maximum Score
40	Relevance to industrial needs & priorities	40%
20	Clear workable methodology & plan	20%
15	Potential deliverables & products	15%
15	Opportunity for cross IAB & cross partner university collaboration	15%
10	Research team qualifications	10%
100		100%

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TAU-JYU

13 March 2019

Name of CVDI Site Director

Name of CVDI Academic Site

Today's Date