DEGREE: MSc in Artificial Intelligence

Module: Robotics Project Management

Assignment Title: Robotics Implementation Strategy and Integration Readiness Assessment for a Complex Robotics System

Assignment Type: Written assignment, including essay

Word Limit: 3000 words (+/- 300)

Weighting: 100%

Issue Date: 15-12-2025

Submission Date: 30-01-2026

Feedback Date: 10-03-2026

Issued by: Dr. Giulio Napolitano

Plagiarism:

When submitting work for assessment, students should be aware of the InterActive/Canvas guidance and regulations in concerning plagiarism. All submissions should be your own, original work.

You must submit an electronic copy of your work. Your submission will be electronically checked.

Harvard Referencing:

The Harvard Referencing System must be used. The Wikipedia, UKEssays.com or similar websites must **not** be used or referenced in your work.

Introduction

This final assignment requires you to demonstrate your ability to plan, analyse, and simulate the integration and deployment of a robotics system in a realistic organisational context. Your task is to produce a professional Robotics Implementation & Integration Plan for a robotics solution of your choice (e.g., autonomous inspection drone, surgical robotic assistant, mobile warehouse robot, construction robot, agritech robot...). Your work should combine analytical writing, evidence-based justification, and practical simulations.

Learning Outcomes:

LO1. Innovate and implement project management strategies tailored to the dynamic and interdisciplinary nature of robotics projects, effectively adapting to emerging technologies and unforeseen challenges.

LO2. Critically analyse the ethical and societal implications of robotics projects, considering responsible and sustainable deployment, and conducting research on industry best practices in robotics project management.

LO3. Demonstrate ability to plan for professional collaboration, stakeholder communication, and network engagement in real-world robotics scenarios.

Assessment Criteria: Weighting 100%
3000 words

Tasks:

You are to write a professional project plan and evaluation report structured as follows.

1. Introduction to Robotics Implementation and Deployment Context

a. Describe the robotics solution and the environment in which it will be deployed.
b. Explain its organisational, technical, or societal relevance.
c. Identify key integration and deployment challenges (technical, human, organisational) and justify the need for structured project and integration management.

2. System Architecture and Integration Requirements

a. Provide a high-level architecture overview (hardware, software, interfaces, data flows).
b. Define integration requirements between subsystems (sensors, actuators, AI models, cloud systems, API layers).
c. Develop at least six user stories relevant to your system (e.g., "As a warehouse manager, I want..., so that...").

Of these, at least **three should be integration-oriented user stories** - focusing on stakeholders such as operators, technicians, or end-users.

d. From all user stories, derive functional and non-functional **integration requirements** (e.g., latency, reliability, maintainability, safety). Use the MoSCoW method for prioritization.

3. Project Management Approach for Implementation

You must design an approach using **two methodologies**, each applied to different project components.

a. Choose one subsystem to manage using **Agile** (e.g., vision model tuning, navigation software).
b. Choose another subsystem to manage using **Waterfall** (e.g., hardware integration, sensor calibration, testing protocols).
c. Justify each methodological choice using robotics-specific arguments (e.g., hardware rigidity vs. software flexibility).
d. Explain how monitoring, adaptation, and progress reporting differ between the two tracks.

4. Implementation Phases, Work Packages, and Integration Simulation

a. Provide a structured **implementation plan** broken down by phases (e.g., integration preparation, interface testing, pilot deployment, acceptance).
b. Assign roles based on interdisciplinary robotics teams (e.g., systems engineer, AI engineer, QA lead).

c. Include a **Work Breakdown Structure (WBS)** with tasks and integration deliverables.

Simulation Component:
i) **Agile Board Simulation** (for the Agile subsystem)

- Product backlog with at least 5 items
- At least 3 items in the current sprint
- 2 items assigned to named roles
- Create using Trello or equivalent
- Provide screenshots + short annotations

ii) **Integration Timeline (Gantt Chart)**

- At least 5 phases with dependencies and integration milestones
- Produce using TeamGantt or similar
- Provide screenshot + explanation of sequencing logic

5. Integration Risk Assessment and Mitigation Framework

a. Identify integration-specific risks (sensor failure, model drift, hardware–software incompatibility, ethical concerns, deployment hazards).
b. Provide a **visual risk matrix**.
c. Include **one simulated risk event** (e.g., late vendor delivery, safety compliance failure) and describe the response process, contingency, and escalation path.

6. Quality, Resource and Deployment Readiness Management

a. Define "quality" in the context of robotics deployment (safety, accuracy, reliability, sustainability).
b. Outline QA and integration testing protocols (interface tests, system tests, validation).
c. Estimate resources for integration and deployment (human, technical, budgetary).
d. Explain how you would track resource usage and readiness across Agile and Waterfall components.

7. Ethical, Societal and Stakeholder Deployment Considerations

a. Identify relevant stakeholders and map them in a stakeholder matrix.
b. Outline a communication and engagement strategy tailored to each stakeholder group (operators, public, safety regulators, technical teams).
c. Analyse ethical and societal implications (workforce impact, accountability, data handling, environmental sustainability).

8. Summary and Conclusion

a. Summarise the strengths and potential challenges of your integration plan.
b. Reflect on what the simulation reveals about robotics project implementation in real settings.
c. Suggest improvements or future directions for system deployment.

Grading Criteria (100%)

- Clarity of robotics concept & deployment scope – **10%**
- User stories & requirement derivation – **15%**
- Methodology selection & justification – **15%**
- Implementation plan, WBS & simulations – **20%**
- Integration risk & quality management – **15%**
- Ethical, societal & stakeholder engagement – **10%**
- Structure, presentation & referencing – **15%**

Submission Guidelines

- Compile a comprehensive document that covers all requirements.
- Where needed, include screenshots or embedded visuals illustrating your original contributions.
- Your report must be clear, organized, and visually appealing, using the BSBI assignment template available on Canvas.
- Cite and reference all sources using the Harvard referencing style.
- Ensure your document includes your name, student ID, and assignment title in the correct places.
- Upload your submission as a single file (PDF or DOC) on the BSBI portal by the specified deadline.
- Please refer to the Essay-Guide available in Canvas for further instructions.

Students are encouraged to explore additional reputable sources in the digital library beyond the list provided to strengthen their individual research and critical analysis skills. The unit lecturer can help with recommending additional literature.

The criteria for successfully passing the units with two assessment components require passing both components successfully. Passing marks for BSc and MA/MSc levels are different and are stated at the end of

the assignment brief. Please find the examples below:

· **Example 1** (e.g., pass mark: 50)
· Component 1 (50% weighting) - 55
· Component 2 (50% weighting) - 55
· Final average: 55
· Result: **Pass (both components passed and therefore the unit is passed)**

· **Example 2** (e.g., pass mark: 50)
· Component 1 (50% weighting) – 80
· Component 2 (50% weighting) – 30
· Final average: 55
· Result: **Fail (because although the average is above 50, one of the components is a failure**)

GRADING DESCRIPTORS: LEVEL 7

EXPERIMENTATION & INNOVATION								
	FAIL			**PASS**				
Threshold Criteria	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-89%	90-100%
Deals with complex issues both systematically and creatively demonstrating self-direction and originality in tackling and solving problems	Little to no ability to use techniques to deal with complex issues systematically (including those of ethics and sustainability) and creatively to solve problems and/or make decisions.	Low utilisation of established techniques to deal with complex issues systematically (including those of ethics and sustainability) and creatively to solve problems and/or make decisions, but with limitations in techniques or approach.	Limited research or advanced scholarship to their area of study by using a range of information and established and advanced techniques	Competent understanding of solving problems, through own research or advanced scholarship displaying a comprehensive understanding of established and advanced techniques	Good understanding of solving problems through own research and advanced scholarship critically selecting and displaying a comprehensive understanding of established and advanced techniques.	Very Good problem-solving skills displaying a comprehensive understanding of techniques applicable to their own research or advanced scholarship	Excellent range of extremely well-developed problem-solving displaying an understanding of techniques applicable to their own research or advanced scholarship beyond which is taught.	Exceptional problem-solving skills with sophisticated evaluation and application of a wide range of advanced information and techniques to undertake projects.
Comprehensive understanding of techniques applicable to their own research or advanced scholarship	Little to no understanding of techniques applicable to their own research or advanced scholarship or their limitations and ambiguities.	Low understanding of techniques applicable to their own research or advanced scholarship including their limitations and ambiguities.	Limited understanding of key techniques applicable to their own research or advanced scholarship including their limitations and ambiguities.	Competent understanding of techniques applicable to their own research or advanced scholarship including their limitations and ambiguities	Good understanding of techniques applicable to their own research or advanced scholarship and a some understanding of more specialised techniques.	Very good understanding of techniques applicable to their own research or advanced scholarship and a some understanding of more specialised techniques.	Excellent understanding of techniques applicable to their own research or advanced scholarship and mastery of some more specialised areas.	Exceptional understanding of techniques applicable to their own research or advanced scholarship and mastery of some more specialised areas.

GRADING DESCRIPTORS: LEVEL 7

RESEARCH & ANALYSIS

	FAIL			PASS				
Threshold Criteria	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-89%	90-100%
Systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of their academic discipline, field of study or area of professional practice	Little to no knowledge of the subject with limited breadth or depth or deficiencies in major areas or currency.	Low knowledge of the subject lacking coherence, breadth, or detail with only some reference to ideas or arguments at the forefront of any part of the subject.	Limited knowledge to deal with terminology, facts and concepts some of which is informed by the forefront of defined areas of the subject.	Competent knowledge of ideas or arguments at the forefront of any part of the subject sufficient to deal with current issues in the discipline, generally more descriptive than critical or analytical.	Good knowledge of ideas or arguments at the forefront of any part of the subject showing a clear, critical insight into the discipline as whole and current issues/problems.	Very good knowledge of ideas or arguments of the subject some of which are significantly beyond what has been taught and show a critical insight into the discipline and current issues/problems.	Excellent knowledge of ideas or arguments at the forefront of the subject many of which are significantly beyond what has been taught and show a critical insight into the discipline and current issues/problems.	Exceptional knowledge of ideas or arguments at the forefront of the subject most of which are significantly beyond what has been taught and show a critical insight into the discipline and current issues/problems.
Conceptual understanding that enables the student to display originality in the application of knowledge	Little to no conceptual understanding or argument and a focus on descriptive explanations which do not comment on arguments of others or alternative views.	Low conceptual understanding and arguments are weak or poorly constructed, and the work does not critically evaluate the arguments of others or consider alternative views.	Limited conceptual understanding and argument construction with critical evaluation of alternative views or comment on advanced scholarship.	Competent conceptual understanding and argument construction with critical evaluation of a range of views and consistent engagement with advanced scholarship.	Good conceptual understanding which critically evaluate and synthesise other views and information with a thoughtful interpretation of advanced scholarship.	Very good conceptual understanding which systematically synthesises a wide range of views with a critical insight into advanced scholarship.	Excellent conceptual understanding which critically apply a wide range of views through a perceptive use of advanced scholarship.	Exceptional conceptual understanding of publishable quality with systematic engagement and usage of advanced scholarship.

GRADING DESCRIPTORS: LEVEL 7

ENGAGING WITH PRACTICE								
	FAIL			**PASS**				
Threshold Criteria	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-89%	90-100%
Practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline	Little to no evidence of background investigation, analysis, research, enquiry, ethical awareness, and/or study.	Low evidence of background investigation, analysis, research, enquiry, ethical awareness, and/or study.	Limited background investigation, analysis, research, enquiry , ethical awareness, and/or study using established techniques, with the ability to extract relevant points.	Competent investigation, analysis, research, enquiry, ethical awareness, and/or study using established techniques accurately, and can critically appraise and use academic sources.	Good background investigation, analysis, research, enquiry, ethical awareness, and/or study using established techniques accurately, and possesses a well-developed ability to critically appraise a wide range of sources.	Very good, independent, extensive and appropriate investigation, analysis, research, enquiry, ethical awareness, and/or study beyond the usual range, and critically evaluates this to advance the work and/or direct arguments.	Excellent independent, extensive and appropriate investigation, analysis, research, enquiry, ethical awareness, and/or study well beyond the usual range, and critically evaluates this to advance the work and/or direct arguments.	Exceptional investigation, analysis, research, enquiry, ethical awareness, and/or study which demonstrates carefully considered depth and breadth and critically synthesises this to advance the work and/or direct arguments.
Originality in the application of knowledge	Little to no technical, creative or artistic skills related to their area of study.	Low technical, creative or artistic skills related to their area of study.	Limited technical, creative or artistic skills required for area of study.	Competent technical, creative or artistic skills required for area of study.	Good technical, creative or artistic skills required for area of study.	Very good range of technical, creative or artistic skills.	Excellent range of technical, creative or artistic skills	Exceptional range of technical, creative or artistic skills
Independently advance your own knowledge and understanding, and to develop new skills to a high level.	Little to no contribution to group activity and/or undertaking further training at a high/advanced level.	Low contribution to group activity and/or undertaking further training at a high/advanced level.	Limited contribution to group activity and/or undertaking further training at a high/advanced level.	Competent contribution to group activity and/or independently undertakes further training at a high/advanced level.	Good contribution to group activity and/or independently undertakes further training at a high/advanced level with an understanding of team roles	Very good contribution to group activity and/or independently undertakes further training at a high/advanced level with an understanding of team roles	Excellent contribution to group activity and/or independently undertakes further training at a high/advanced level with teamwork and leadership	Exceptional contribution to group activity and/or independently undertakes further training at a high/advanced level with teamwork and strong leadership.

GRADING DESCRIPTORS: LEVEL 7

REALISATION & COMMUNICATION								
	FAIL			**PASS**				
Threshold Criteria	**0-29%**	**30-39%**	**40-49%**	**50-59%**	**60-69%**	**70-79%**	**80-89%**	**90-100%**
Communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.	Little to no clarity in the communication of ideas, problems and solutions to audiences.	Low clarity in the communication of ideas, problems and solutions to audiences.	Limited clarity in the communication of ideas, problems and solutions to audiences.	Competent communication of ideas, problems and solutions to audiences.	Good, confident and clear communication of ideas, problems and solutions to audiences in a range of means / media.	Very good, confident and clear communication of ideas, problems and solutions to audiences in a range of means / media.	Excellent communication of ideas, problems and solutions to audiences in a range of means / media.	Exceptional communication of ideas, problems and solutions to audiences in a range of means / media.

GRADING DESCRIPTORS: LEVEL 7

PERSONAL & PROFESSIONAL CONNECTIVITY								
	FAIL			**PASS**				
Threshold Criteria	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-89%	90-100%
Independently advance your own knowledge and understanding, and develop new skills to a high level.	Little to no contribution to group activity and/or undertaking further training at a high/advanced level.	Low contribution to group activity and/or undertaking further training at a high/advanced level.	Limited contribution to group activity and/or undertaking further training at a high/advanced level.	Competent contribution to group activity and/or independently undertakes further training at a high/advanced level.	Good contribution to group activity and/or independently undertakes further training at a high/advanced level with an understanding of team roles	Very good contribution to group activity and/or independently undertakes further training at a high/advanced level with an understanding of team roles	Excellent contribution to group activity and/or independently undertakes further training at a high/advanced level with teamwork and leadership	Exceptional contribution to group activity and/or independently undertakes further training at a high/advanced level with teamwork and strong leadership.
Qualities and transferable skills necessary for employment requiring: (a) the exercise of initiative, ethical and personal responsibility (b) decision-making in complex and unpredictable contexts	Little to no ability to manage learning and/or exercise initiative, ethical and personal responsibility and/or decision-making in complex and unpredictable situations	Low ability to manage learning and/or exercise initiative, ethical and personal responsibility and/or decision-making in complex and unpredictable situations	Limited ability to manage learning and exercise initiative, ethical and personal responsibility, and decision-making in complex and unpredictable situations	Competent ability to manage learning, and exercise initiative, ethical and personal responsibility, and decision-making in complex and unpredictable situations	Good ability to systematically manage learning, and exercise initiative, ethical and personal responsibility, and decision-making in complex and unpredictable situations	Very good ability to systematically manage learning, and exercise initiative, ethical and personal responsibility, and decision-making in complex and unpredictable situations.	Excellent ability to manage learning on own initiative, and exercise initiative, ethical and personal responsibility, and decision-making in complex and unpredictable situations	Exceptional ability to manage learning on own initiative, and exercise initiative, ethical and personal responsibility, and decision-making in complex and unpredictable situations
	Little to no use of appropriate terminology, limited vocabulary and many errors in spelling, grammar and syntax.	Low use of appropriate terminology, with many errors in spelling, vocabulary and syntax.	Limited expression, style and appropriate vocabulary with errors in spelling, grammar and syntax which affect understanding.	Competent expression, style, and appropriate vocabulary with some errors in spelling, grammar and syntax which do not affect understanding.	Good expression, style and appropriate vocabulary with some errors in spelling, grammar and syntax.	Very good expression, style and appropriate vocabulary with minimal errors in spelling, grammar and syntax.	Excellent expression, style and appropriate vocabulary with minimal errors in spelling, grammar and syntax.	Exceptional expression, style and appropriate vocabulary with no errors in spelling, grammar and syntax.

GRADING DESCRIPTORS: LEVEL 7

	Little to no evidence of basic numeracy or digital literacy, hardware and software skills	Low evidence of basic numeracy or digital literacy, hardware and software skills competency.	Limited evidence of numeracy or digital literacy, hardware and software skills competency.	Adequate evidence of numeracy or digital literacy, hardware and software skills competency.	Good evidence of numeracy or digital literacy, hardware and software skills competency.	Very good evidence of numeracy or digital literacy, hardware and software skills	Excellent evidence of numeracy or digital literacy, hardware and software skills competency.	Exceptional evidence of numeracy or digital literacy, hardware and software skills competency.

	competency.					competency.	
	Does not demonstrate achievement of professional competence when assessed against the requirements of a professional, statutory or regulatory body (PSRB).			The student has demonstrated achievement of professional competence when assessed against the requirements of a PSRB.			
	Inaccurate use of terminology with limited vocabulary and many errors in spelling, grammar and syntax. Inaccurate terminology, with many errors in spelling, vocabulary and syntax.			The student has adhered to the appropriate rules and/or conventions set by regulators or the industry.			