Coding Manual: Technology Readiness and the Organizational Journey Towards AI
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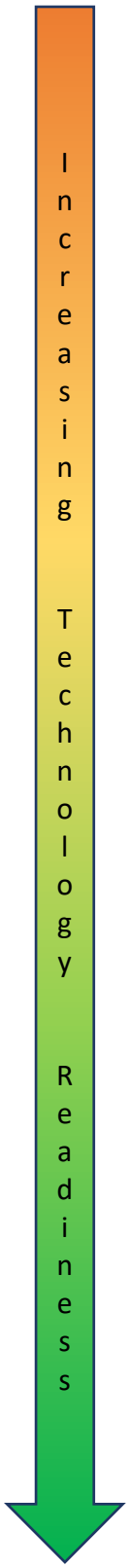
Code	Notes	Examples
TRL	Based on the NASA Technology Readiness Levels with modifications for IS. Concerns the development of technology from principles and vision (level 1) through to operational use (level 9) May code the levels (TRL1-9) that are relevant. See TRL table below.	*"Then we do it on site with them and with real data. Typically, what we'll do is we'll do it in parallel to production."* [TRL 4 or 5] *"The ones that get it, they go into the execution, so from probably TRL 5 through to that prototype, get the business buy in."* [TRL 5+]
CMM	Originating from the U.S. Department of Defense Capability Maturity Model CMM and refined by others including Carnegie Mellon University. Addresses the formality of processes within an organization, including those for system development and quality management. Has 5 levels, with a variety of labels, where 1 is the least mature and 5 the most. May code the levels. See figure below. https://en.wikipedia.org/wiki/Capability_Maturity_Model_Integration	*"how do we de-risk it? It's more of a phased approach"* [CMM2 perhaps?] *"suddenly all those people, well I don't think they're out of a job right? But they're not training chat bots anymore. Those businesses have basically been out comp... gazumped by BigITCompany."* [CMM 4&5?]
People	Refers to People in the "golden triangle" covering user needs, the users of solutions, developers, but also levels of management within an organization which need to champion change.	*"all the chief executives, all the regulatory bodies, the first time I think in years they've all sat together in the same room"* [People] *"I've really emphasised on them it being a really crucial part of our business because they hold the knowledge that the AI will never have"* [People]
Processes	Refers to Processes in the "golden triangle" referring to how things get done, i.e. the cross functional steps needed to deliver desired outcomes. Two kinds of process can de distinguished: **Development Processes**, which are the processes the development organization uses to deliver systems, and **Business Processes** which the client organization uses to generate value.	*"the disrupter, where they're trying to find new models of software and business using these techniques to disrupt the market. So to bring new capabilities, new apps, new insights takes those kind of things."* [Business Processes]

		"*a big part of the product is around what I call weird thing spotter. And that is about working out when you've left the heating on overnight basically is a good example*" [Business Process] *"If the data was in the right shape it means somebody's put it in the right shape already, which means they've done a similar piece of work."* [Development Process]
Technology	Refers to Technology in the "golden triangle" – the hardware, software, infrastructure, architecture etc. required to make the information system function.	*"So there's a chat bot on the product and that's something that's not built by us. We borrow BigITCompanyName's. Buy a ProductName2 product. That's a creepily, terrifyingly good bot"* [Technology] *"the temperature sensors that we take temperature readings from there were installed in 1998, which is, what's that? Dot com bubble right? It's before the dot com bubble burst, it's before FaceBook, it's before cybersecurity was a word. It' a really, really long time ago and we have to interface with all of those devices so you have some reliability issues"* [Technology]
Data	Whatever can be stored in computer storage media, manipulated by computer operations or transferred via communications networks. Covers the features and attributes of Data but NOT what it is used for, which is coded as Process	*"You can't turn around and say "give me your data dump! I want to do something really interesting and do, you know, work with my computer science team and let's see what we come up with". You can't do that"* [Data] *"the understanding of data as an asset. So you have, um the governance around that dataset, so data governance as a conversation has evolved massively and the standard industry didn't really keep up that well. So, you have your standard taxonomy based quality which is are things called the right thing. You have your availability of data concerns, you know have*

		we got the right comparative granularity and those things. Through to how the data changes and is different and is difficult. So, you know, how can it be true that the data looks like this when it didn't yesterday?" [Data]
Success Criteria	Criteria used by a business to assess whether the deliverables of a project, function or process are what was asked for. In some cases, these may be quality metrics used to judge the acceptability of products or services to customers.	*"reducing the time for innovation to be adopted"* [Success Criteria] *"Reliability, resilience and uptime"* [Success Criteria] *"then there's that change management so are the actual end users that are going to use this system, whether it be the end citizen or whether it be an employee, are they getting engaged. Are they buying in. Are they seeing the advantages. Are we being able to argue successfully against any fear factors or frustrations about this so it is a project that could scale. So I'd say we have these evolving success criterias through different phases of the project."* [Success criteria]
Role of AI	Concerns the ways in which AI is used and the kinds of human activity it replaces, for example automation or decision support.	*"for example in radiology, we can have a second viewing by a machine, rather than a peer to peer human, and under exceptional circumstances if they don't agree then it goes to another human, erm, how do we streamline things like that? That's what I'm interested in"* [Role of AI]

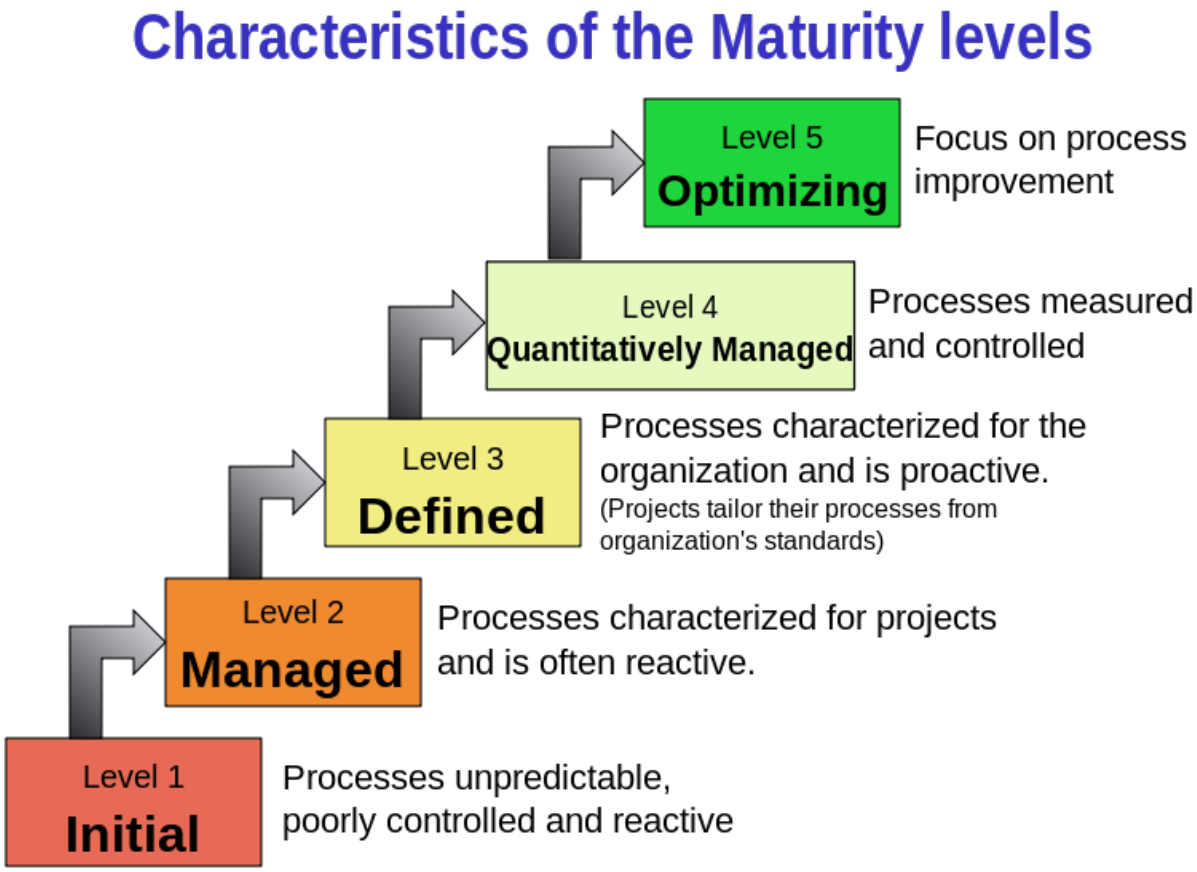
Technology Readiness Levels[1]



Level	Description	Diagnostic Questions
TRL 1	Basic Principles and Broad vision	Have you researched the system in principle? Do you have a vision for the system?
TRL 2	Conceptual design	Have you proposed engineering components which need to be part of the system? Do you have a conceptual design for the system?
TRL 3	Theoretical & experimental analysis. Proof of concept	Have you experimented with subcomponents of the system? Have you scrutinized innovative components?
TRL 4	Component validation in "laboratory" conditions	Have you integrated subcomponents of the AI system to check that they will work together? Have you considered issues such as interoperability, maintainability, scalability, security etc.?
TRL 5	Component validation in more realistic conditions	Have you developed a high-fidelity prototype of the system with reasonably realistic components? Have you verified the prototype works as desired?
TRL 6	Subsystem model or prototype demonstration	Have you demonstrated a prototype system in a relevant environment (e.g. lab test with realistic data or test in simulated environment)?
TRL 7	System prototype demonstration in operational environment	Do you have an operational system that can be demonstrated in its operational environment? Are there processes in place to support the software?
TRL 8	Actual system completed, tested and demonstrated	Do you have a system which is in its final form and meets its design specifications? Is it ready to work in its intended application?
TRL 9	Actual system proven through operational use	Has the software been used under operational conditions for an extended period? Has it been debugged? Does it reliably produce the required outputs?

[1] Based on Meystel, A et al., 2003 Performance Measures for Intelligent Systems: Measures of Technology Readiness, PERMIS'03

Capability Maturity Model



Source:
https://en.wikipedia.org/wiki/Capability_Maturity_Model_Integration#/media/File:Characteristics_of_Capability_Maturity_Model.svg