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Trial Exam II: MOT113a Technology Dynamics

Exercise	Assessment Criteria	Points
1 I	Structural components are a) innovative agents and stakeholders including their values, their relationships, institutions Difference between innovative agents (actively influencing innovative processes) and other stakeholders (not able to do so) Innovative agents: • Universities (usually creation and dissemination of knowledge) • Large companies and SMEs (usually efficiency/profit)) • Government at different levels (e.g. access to public goods such as transportation or health services, privacy) for major innovative agents and stakeholders including their values, * their relationships, particularly those developing because of particular case chosen * formal institutions, such laws and regulations, and informal institutions, such as codes of conduct	 1 6 2 3
1 II	Name values aligned and/or conflicted	6
1 III	Discussion of aligned and contradictory values, in particular Alignment of values can lead to shared values, possibly stimulating collaboration between innovative agents or giving them more incentives and legitimacy to proceed in the interest of the other stakeholders. Value conflicts can harm some stakeholders and even lead to problems in innovation processes if the harmed stakeholders are not compensated	 4 4
1 IV	shared values can serve as a value-related driver if all stakeholders collaborate on this (and possibly those worse off are compensated); attention must be paid to conflicting values where agents/stakeholders are not compensated for, because they can become a bottleneck; also an already existing collaboration or an already existing institution can serve as either bottleneck or driver	8
1 V	Concrete solutions based on shared values for next cycle: generally speaking conflicting values should be considered a.s.a.p. so that there is a chance to take solve them in the design of the solution (if not negotiation of compensations necessary)	7

Exercise	Assessment Criteria	Points
2a)	Major concepts: • blockchain (distributed ledger technology creating trust between agents/stakeholders unknown to each other), • peer-to-peer energy trading (prosumers and consumers trading energy without intermediary), • electricity markets (exchange of electrical energy between producers and consumers through an electrical grid) Research Questions "… blockchain technology for Peer-to-Peer energy trading and its implications are explored, especially in view of the 'trilemma': scalability, security, and decentralisation." (abstract) Resolution "Peer-to-Peer energy trading is the focus of this paper, which ultimately proposes a blockchain scalability solution. This solution is empirically modelled using data collected in a trial case study. The proposed solution increases scalability without compromising security and decentralisation when compared to base layer models." (abstract	 3 3 3 5 6
2b)	Prosumer: producer and consumer of energy; Consumer: acquiring and using energy Blockchain-enabled peer-to-peer trading enables • prosumers to trade their energy with consumers without intermediary (they still need access to the grid though), • gives consumers direct access to sustainable energy, e.g. from solar panels • makes energy cheaper for both prosumers and consumers	2 3 2 3
2c)	Agents conducting inclusive research and innovation in STEM explore and exploit the potential of the diversity of human beings in all its facets to drive scientific discovery and innovation. Whenever relevant, they integrate the diversity of human beings into all phases of research and innovation covering research questions, methods, factors, analysis, and reporting. Thereby, they provide inclusive and excellent outcomes for all human beings.	5
2d)	Energy poor people are most likely also income poor. So, it is unlikely that they are able to install e.g. solar panels themselves. That means that they are not able to become prosumers (a full subsidy of the government for this might help). Also, access to the electricity grid via blockchain technology costs money - though less than investing as prosumers. So, energy poor people will have at best access as consumers. In this case, they would benefit from blockchain-enabled P2P energy trading. Yet in most cases they will not have access for the aforementioned reasons so that this technology is not inclusive	10
Total	**Number of Points realized**	
Calculate	Number of Points realized divided by 90 points * 100	
Calculate	Round up or down according to the normal rules and fill in a **whole number as mark**	