

Architecture \ Requirements		optimization			machine control			digital twins						interfaces & support				human-factor					visuali- zation		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		knowledge about upstream and downstream processes	optimization at a global scope	immediate knowledge about unexpected situations	consistent real-time handling of production and sensor data	control technology for the plant (timing independent)	Low Latency for time-critical tasks	logical connection between DTs	creating and managing DTs	inherited structure for DTs with variants or configurations	basic DTs and advanced DTs	cascaded structure of DTs for subsystems	exchange format for DT-description	unified communication interface for DTs	algebraic optimization	AI / ML	manual input for additional data in DTs	AR / VR / XR	DT for humans	human interaction with the metaverse	protection of personal employee data	support of the employees in the execution of the work	real time notification of the employee	visualization of processes	visual guidance for tasks
[1]	Aloqaily et. al.	1	1	-	1	1	1	1	2	-	-	-	1	1	1	2	-	2	1	2	1	1	1	2	1
[2]	Cheng et. al.	3	1	2	2	1	2	2	2	1	1	2	1	2	1	1	1	1	1	1	-	1	1	-	-
[8]	Alpala et. al.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	1	2	-	1	2	2	2
[11]	Robles et. al.	1	-	-	2	1	1	2	2	-	1	1	2	2	-	2	1	2	-	1	1	-	1	1	1
[19]	van Huynh et. al.	1	-	1	1	1	2	1	-	-	-	-	-	-	1	-	-	-	-	-	-	1	1	-	-
Our metaverse vision		3	3	3	2	3	2	3	3	2	3	2	2	2	2	3	3	2	2	2	1	1	2	1	1
		-	not possible / not provided					1	with major restrictions					2	with minor restrictions				3	fully supported					