

IT System Architect

The IT System Architect plays a pivotal role in the automotive industry by designing and overseeing the structure of complex IT systems that support business goals, digital transformation, and emerging mobility solutions. Their activities include analysing requirements, selecting appropriate technologies, and developing architectural blueprints that integrate software, hardware, and network components. They balance performance, scalability, cost-efficiency, and security, while ensuring alignment with industry standards and organisational strategy.

Key responsibilities include creating robust IT infrastructures, guiding development and operations teams, ensuring cybersecurity and regulatory compliance, and future-proofing systems through the adoption of innovative technologies. They bridge communication between technical experts and business stakeholders, translating strategic needs into effective technical solutions. Essential competences span digital skills (cybersecurity, cloud architecture, system design), sector-specific expertise (automotive IT ecosystems, integration of digital platforms), green competences (eco-efficient IT, sustainable infrastructures), and soft/transversal abilities (leadership, strategic planning, communication, stakeholder management).

ESCO Mapping

<https://esco.ec.europa.eu/select-language?destination=/node/1>

ID	NAME	Concept URI

Context

EQF Level	7
Departments	IT & Digital

Green Competences

ID	Name	Type	Description	Level	ESCO
C01 6	Design energy-efficient systems	Skill	Apply eco-design principles in IT system architectures to improve energy efficiency and resource use. ▪	3	
C01 7	Sustainable cloud strategies	Knowledge	Understand how to design cloud solutions that balance scalability, performance, and environmental goals. ▪	2	

Digital Competences

ID	Name	Type	Description	Level	ESCO
C08 2	Cybersecurity architecture	Knowledge	Understand principles, frameworks, and standards for designing secure IT systems. ▪ Define cybersecurity requirements for IT architectures ▪ Apply standards such as ISO 27001 or NIST frameworks ▪ Identify vulnerabilities in system design ▪ Integrate security-by-design principles into IT solutions ▪ Collaborate with teams to ensure compliance with data protection regulations	3	
C08 3	Cloud architecture	Knowledge	Understand how to design and implement cloud-based infrastructures for scalable and resilient IT systems. ▪ Define cloud strategies aligned with business and technical goals ▪ Select appropriate cloud service models (IaaS, PaaS, SaaS) ▪ Design hybrid or multi-cloud solutions ▪ Ensure cloud performance, security, and cost optimisation ▪ Plan migration of legacy systems to cloud environments	3	
C08 4	Design system architectures	Skill	Design IT system architectures integrating software, hardware, and network components to meet organisational needs.	3	

ID	Name	Type	Description	Level	ESCO
			▪ Develop architectural blueprints and system roadmaps ▪ Define interfaces and integration standards for subsystems ▪ Evaluate scalability, performance, and resilience of system designs ▪ Provide technical guidance to development and operations teams ▪ Align IT architecture with organisational strategy and standards		

Soft Skills

ID	Name	Type	Description	Level	ESCO
C139	Lead teams	Skill	Guide and support cross-functional teams to deliver IT architecture projects successfully. ▪ Define goals and vision for system architecture initiatives ▪ Motivate and mentor team members ▪ Provide feedback and promote accountability ▪ Represent architecture goals to stakeholders ▪ Foster a culture of innovation and quality	3	Link
C127	Communication	Knowledge	Convey complex IT concepts clearly to technical and non-technical audiences. ▪ Present architectural roadmaps to management and teams ▪ Translate business requirements into technical specifications ▪ Prepare reports and documentation for stakeholders ▪ Adapt language and style to different audiences ▪ Facilitate discussions to align technical decisions	2	Link
C123	Collaborate in teams	Skill	Work effectively with diverse teams and partners to align IT architecture with organisational goals.	2	Link

ID	Name	Type	Description	Level	ESCO
			- Coordinate with developers, security experts, and business analysts - Share architectural insights across departments - Support teamwork in problem-solving sessions - Build trust and cooperation with external partners - Promote co-creation in digital transformation initiatives		
C140	Strategic thinking	Knowledge	Apply critical and long-term thinking to align IT architecture with organisational objectives. - Analyse technological trends to anticipate business needs - Identify opportunities for innovation and competitive advantage - Prioritise architecture initiatives based on strategic value - Balance long-term vision with short-term constraints - Ensure alignment with corporate digital transformation strategy	3	Link

Transversal Competences

ID	Name	Type	Description	Level	ESCO
C164	Solve technical problems	Skill	Solve technical and integration issues in IIoT systems. - Diagnose communication faults between layers. - Test and adjust embedded configurations. - Restore service in real-time system failures. - Apply structured troubleshooting techniques.	2	Link

Sector Specific

ID	Name	Type	Description	Level	ESCO
C24 8	Automotive IT ecosystems	Knowledge	Understand IT system architectures specific to the automotive sector, including connected vehicles and production systems. ▪ Explain requirements of automotive-specific IT infrastructures ▪ Integrate systems for connected and autonomous vehicles ▪ Align IT solutions with standards in automotive production ▪ Support interoperability between automotive platforms and suppliers ▪ Monitor trends in digitalisation of the automotive value chain	3	
C24 9	Integrate industrial systems	Skill	Design and implement integration of IT with industrial automation and production systems. ▪ Define interfaces between IT and OT (Operational Technology) systems ▪ Ensure secure data flows between production equipment and IT platforms ▪ Support deployment of MES and ERP systems in automotive plants ▪ Troubleshoot integration issues across IT and production domains ▪ Collaborate with engineering teams to optimise connected production	3	
C25 0	Implement digital twins	Skill	Apply digital twin technologies to support design, monitoring, and optimisation of automotive systems. ▪ Model automotive systems and processes in digital environments ▪ Integrate real-time sensor data into digital twin platforms ▪ Use simulations to optimise performance and maintenance ▪ Validate digital twin results with operational data ▪ Support predictive and prescriptive applications in automotive contexts	3	
C25 1	Automotive standards and compliance	Knowledge	Apply standards and regulations specific to IT in the automotive industry. ▪ Ensure compliance with ISO 26262, ISO/SAE 21434 and other relevant standards	3	

ID	Name	Type	Description	Level	ESCO
			▪ Apply best practices for functional safety and cybersecurity in automotive IT ▪ Support certification processes for IT platforms ▪ Integrate compliance into design and testing phases ▪ Monitor regulatory updates in the sector		