

Discover careers

A core objective of CHIPS of Europe is to strengthen pupils' interest in the semiconductor industry at secondary-school level by improving awareness of semiconductor-related career opportunities and by making education-to-employment pathways more transparent for pupils and their support environment (teachers, parents and other stakeholders). This chapter therefore provides structured, reusable entry points to career information and materials that can be used in classroom sessions, outreach events, site visits and teacher trainings across different European school contexts.

The project applies a holistic perspective to link learning to realistic career pathways and to support competence development and confidence-building, with teachers enabled to reinforce these elements through classroom implementation and guidance. This approach is consistent with evidence indicating that students' career aspirations are associated with learning opportunities in the semiconductor industry and with their perceptions of professionals in this field, and that the effect of perceptions of professionals on aspirations is moderated by students' self-concept. We therefore combine competence-building learning experiences (e.g. practical activities, demonstrations and visits) with structured exposure to role models—operationalized particularly through GirlsGoDigital for girls and female teenagers and through TrainMyTeacher (TMT) to enable teachers as multipliers using reusable training materials.

1 *Future skills*

While roles in the semiconductor ecosystem often require solid technical understanding and familiarity with industry tools and software, successful performance also depends on problem-solving capacity, communication, adaptability and collaboration—competences that are relevant across job families from R&D to manufacturing and other support functions. In addition, future work trends emphasize human interaction and empathy as important elements of work that are not easily automated, which reinforces the relevance of transversal skills in technology-driven sectors.

2 *Problem-solving skills*

Problem-solving refers to the ability to identify issues, formulate hypotheses, analyze information systematically, test options and implement solutions under real-world constraints (e.g. time, cost, quality). In semiconductor contexts, problem-solving is frequently applied to diagnosing unexpected behavior, identifying root causes, and improving processes or designs incrementally. For pupils and teachers, this skill can be developed through structured tasks that require iteration (trial–observe–adjust), documentation of reasoning, and reflection on what changed the outcome (e.g. in hands-on experiences). This also supports confidence-building: successfully resolving a concrete task strengthens perceived competence, which is relevant for longer-term engagement.

3 *Communication proficiency*

Communication is essential because semiconductor work typically involves cross-functional interfaces and the need to translate complex technical content into actionable information for different audiences. This includes explaining assumptions and results clearly, documenting decisions, and presenting options and risks in a way that supports joint decision-making. At school level, communication skills are strengthened when pupils practice presenting their approach, summarizing results, and explaining concepts in simple terms.

4 *Adaptability and continuous learning*

Adaptability refers to the ability to learn and adjust when methods, tools, requirements or organizational settings change. In a rapidly evolving technology environment, this includes maintaining an active interest in developments, staying connected to emerging trends, and being able to transfer prior knowledge to new contexts. For the Chips of Europe project, this translates into encouraging curiosity and “learning-to-learn” behavior’s: pupils and teachers should be supported in updating their understanding over time and in recognizing that career pathways may evolve with technological change. This focus is consistent with future-of-work perspectives highlighting that many future-oriented jobs require human-centered competence and are only limitedly automatable.

5 *Collaboration and teamwork*

Semiconductor projects are characterized by interdependence across disciplines and roles; effective collaboration therefore becomes a core competence. Teamwork includes coordinating tasks, integrating perspectives, providing constructive feedback, and jointly resolving issues. In school activities, collaboration can be strengthened through group-based problem-solving tasks with defined roles, followed by reflection on how coordination influenced outcomes. This supports the holistic perspective required in complex value chains and multidisciplinary engineering environments.

6 *Open-mindedness and ambitious goals*

Open-mindedness refers to a willingness to consider new approaches, learn from different disciplines, and engage constructively with perspectives that may challenge initial assumptions. In semiconductor-related work contexts, this is relevant because projects and teams often span multiple fields and require continuous coordination across roles and functions. Ambitious goals refer to the ability to set and pursue demanding objectives while taking responsibility for outcomes and quality. In school activities, these competences can be fostered through age-appropriate challenge tasks with clear success criteria and reflection on decision-making, trade-offs, and learning progress.

7 *Curiosity about new trends and developments*

Curiosity about new trends refers to maintaining an active interest in technological and societal developments and seeking to understand how they affect applications, work practices, and future roles. In a fast-evolving technology environment, this supports continuous learning and helps individuals remain effective when tools, methods and priorities change. For WP4, curiosity can be operationalized by linking activities to current application fields and by encouraging pupils to ask questions such as ‘which new topics might create new job profiles?’ Infineon Technologies AG has identified a set of future-oriented topics that act as key enablers of digitalization and decarbonization and, in turn, translate into a broad range of relevant job profiles across the semiconductor value chain.

The future-oriented topics are key enabler for digitalization and decarbonization and result in exciting job profiles

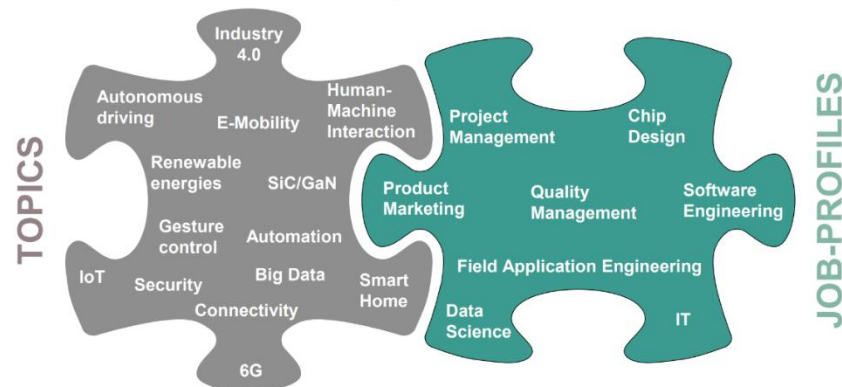


Figure 1: Future topics and job profiles

8 Characteristics of future jobs towards 2035

The future of work

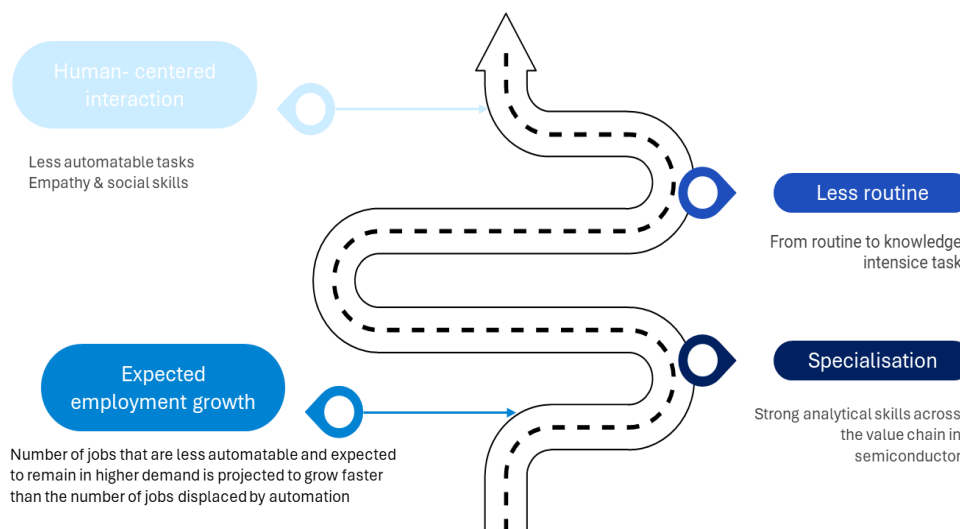


Figure 2: Future of work (project generated figure)

Labour-market outlooks indicate that future-oriented jobs increasingly require interaction with other people and empathy and are therefore considered less automatable than routine-based tasks. In this perspective, a substantial share of working time in future-oriented occupations cannot be replaced by technology, and employment growth is expected to be stronger in roles that combine human-centered interaction with higher-level cognitive work than in roles primarily exposed to automation. This reinforces the rationale for WP4 career orientation to address not only technical knowledge, but also transversal competences that support effective work in multidisciplinary environments. A second characteristic is a shift in the nature of everyday tasks: future jobs are expected to involve less routine work and more analytical thinking and human interaction. Therefore, future roles are described as increasingly knowledge-intensive, requiring specialization, creativity and strong analytical skills. In semiconductor-related contexts, this is relevant across the value chain, including R&D and production environments, as well as supporting functions that rely on interpretation of complex information and cross-functional coordination.

9 Pathways to semiconductor sector

To make career pathways concrete for pupils, teachers, parents and other interested stakeholders, WP4 includes two illustrative company cases describing how entry into semiconductor employment can be approached in practice. Infineon Technologies and GE Healthcare are used as an example. The purpose of these cases is career orientation; it does not constitute endorsement or a restriction to one employer.

WP4 career orientation materials highlight that entry into semiconductor-related careers can follow multiple routes (e.g. apprenticeship/dual studies, internship, thesis, student job, trainee programme, direct entry, or PhD route), and that progression can follow different development tracks (technical ladder, project management, or management career). For users of this toolkit, these routes can be presented as a structured “entry map” that helps pupils to identify realistic next steps depending on their current education stage and interests.

In addition, WP4 dissemination activities already demonstrate how such pathways can be made tangible through school-facing formats: for example, “Application and career training” visits provide pupils with insights into vocational training programmes and information about the application process. Career exploration events also address pupils and parents, combine behind-the-scenes insights with job-specific tasks, and enable interaction with company experts. These examples show how career orientation can be operationalized in an accessible and age-appropriate manner and can be replicated with other employers or regional partners.

10 From school to a semiconductor job - Infineon Technologies

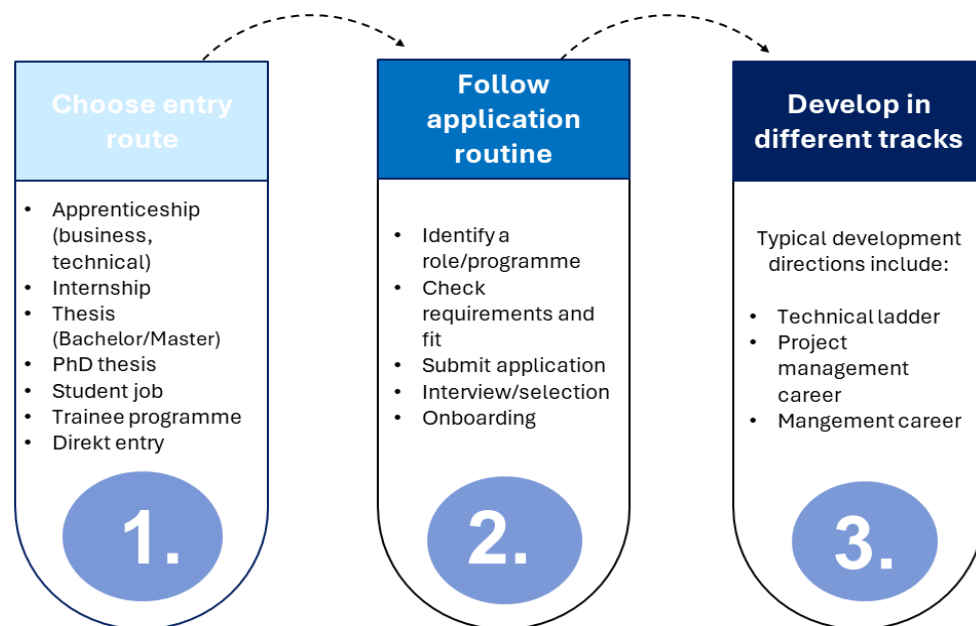


Figure 3: from classroom to semiconductor jobs (project generated figure)

For up-to-date information on job profiles, entry programmes and application steps, toolkit users are directed to the official Infineon careers portal: <https://www.infineon.com/careers>

11 From school to a semiconductor job - GE Healthcare

A further illustrative company case describing how entry into semiconductor employment can be approached in practice is GE Healthcare. They offer multiple routes that shows pupils, teachers, parents and other interested stakeholders how an entry to GE Healthcare could look like. Including apprenticeships, internships and co-ops, development programs and they show entry levels.

For up-to-date information on apprenticeships, internships and Co-ops and Development Programs, toolkit users are directed to the official GE Healthcare careers portal: <https://careers.gehealthcare.com/global/en/entry-level-opportunities>

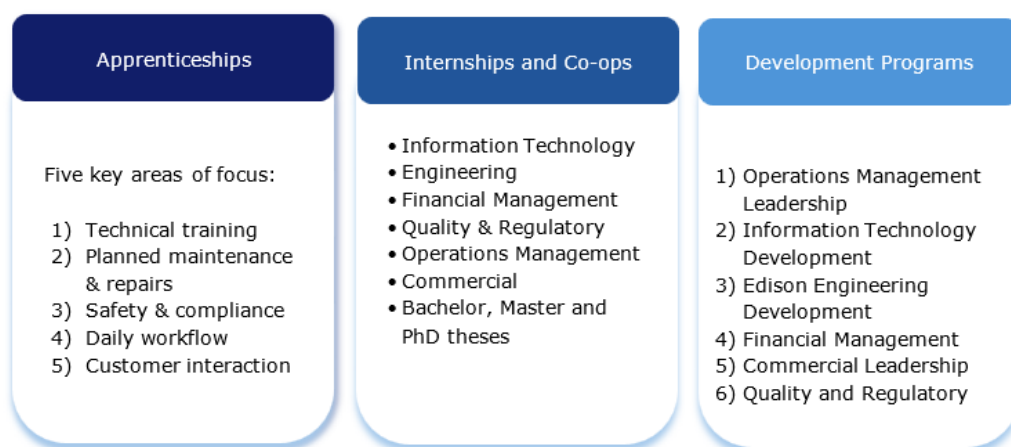


Figure 4: from classroom to semiconductor jobs GE Healthcare (project generated figure)

12 Career learning resources

To complement the career toolkit, it includes also a curated set of short career-focused videos and job stories. These resources are intended to support pupils, teachers and other interested parties in understanding the diversity of semiconductor-related roles and typical entry pathways and can be used as lesson starters or preparation material for career sessions and site visits. The list is maintained as a living resource and can be expanded as WP4 activities progress, ensuring that career orientation content remains accessible and reusable across different locations.

Partner	Title	Description	Language	Type	Link
XFAB	X-FABulous Jobs: Operator in Production	Insights into operator roles and career opportunities at X-FAB sites.	French	Video	https://www.youtube.com/watch?v=xqcdXr-24PI&list=PLDE163kCkC6Yw6Kj4iSNUtUHS2yHAY18h&index=6
XFAB	X-FABulous Jobs: R&D Engineer	Testimonial from an R&D Engineer	French	Video	https://www.youtube.com/watch?v=pNWB37rQdEw&list=PLDE163kCkC6Yw6Kj4iSNUtUHS2yHAY18h&index=8
XFAB	X-FABulous Jobs: Facilities Technician	Testimonial from a Facilities Technician.	French	Video	https://www.youtube.com/watch?v=NHSsTO n8LNs&list=PLDE163kCkC6Yw6Kj4iSNUtUHS2yHAY18h&index=7

Partner	Title	Description	Language	Type	Link
IFAG	Embedded Software and Firmware Engineers	Role overview: embedded software/ firmware design and implementation	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Software-and-Data-Science/Embedded-Software-and-Firmware-Engineers/
IFAG	Data Scientists	Role overview: objectives/hypotheses, data preparation,	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Software-and-Data-Science/Data-Scientists/
IFAG	Project Managers	Role overview: requirements and roadmaps;	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Quality-and-Excellence/Project-Managers/
IFAG	Software Engineers	Role overview: architecture/design; coding/debugging; prototyping; agile methods;	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Software-and-Data-Science/Software-Engineers/
IFAG	Functional Verification Engineers	Role overview: verification plans; methodologies.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Research-and-Development/Functional-Verification-Engineers/
IFAG	Analog and Mixed Signal Design Engineers	Role overview: requirements analysis; analog/mixed design.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Research-and-Development/Analog-and-Mixed-Signal-Design-Engineers/
IFAG	Digital Design Engineers	Role overview: develop digital designs; coordinate design work.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Research-and-Development/Digital-Design-Engineers/
IFAG	Product Engineers	Role overview: product transfer; test limit optimization; problem-solving.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Research-and-Development/Product-Engineers/
IFAG	System Architects	Role overview: technical lead; task partitioning; broad challenges (design/testing)	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Research-and-Development/System-Architects/
IFAG	Technology Development Engineers	Role overview: technology derivatives; unit process requirements.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Research-and-Development/Technology-Development-Engineers/

Partner	Title	Description	Language	Type	Link
IFAG	Test Development Engineers	Role overview: develop test procedures.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Research-and-Development/Test-Development-Engineers/
IFAG	Quality Managers / Engineers	Role overview: qualification testing; lifecycle monitoring.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Quality-and-Excellence/Quality-Managers/
IFAG	Failure Analysis Engineers	Role overview: failure analysis.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Quality-and-Excellence/Failure-Analysis-Engineers/
IFAG	Maintenance Technicians	Role overview: preventive maintenance.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Manufacturing-Operations/Maintenance-Technicians/
IFAG	Maintenance & Equipment Engineers	Role overview: resolve equipment issues.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Manufacturing-Operations/Maintenance-and-Equipment-Engineers/
IFAG	Process Engineers	Role overview: improve processes; solve manufacturing challenges.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Manufacturing-Operations/Process-Engineers/
IFAG	System Application Engineers	Role overview: customer application solutions; system design proposals.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Customer-Collaboration-and-Technical-Marketing/System-Application-Engineers/
IFAG	Managers Application Marketing and Management	Role overview: deploy go-to-market strategy; support design wins.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Customer-Collaboration-and-Technical-Marketing/Managers-Application-Marketing-and-Management/
IFAG	Field Application Engineers	Role overview: link customers/sales /development; evaluate solutions.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Customer-Collaboration-and-Technical-Marketing/Field-Application-Engineers/
IFAG	Product Application Engineers	Role overview: technical go-to-market collateral; technical customer interface.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Customer-Collaboration-and-Technical-Marketing/Product-Application-Engineers/
IFAG	Managers Product Marketing & Management	Role overview: product strategy and communication.	English	Job profile	https://www.infineon.com/cms/en/careers/working-at-infineon/Customer-Collaboration-and-Technical-Marketing/Managers-Product-Marketing-and-Management/

Figure 5: Career learning resources