



AREVA

forward-looking energy



Holistic Expert Management: Riding the Waves of Critical Competences

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Overview and outline

- ▶ Challenges and need to act:
 - ▶ Shortage MINT,
 - ▶ Generation / Gallup-Study
 - ▶ Adaption to German energy transition
 - ▶ Suppliers, roadmapping...
- ▶ Do:
 - ▶ Nomination process
 - ▶ Expert data bank
 - ▶ General Expert Program
- ▶ Planning:
 - ▶ Job Codes Link to company strategy
 - ▶ Critical jobs
 - ▶ Expert Domains
- ▶ Check:
 - ▶ Project manager interviews
 - ▶ Survey on innovation culture



Challenges and need to act

Supply

Skills shortage of engineers (example)

Engineering



Note: Skill shortage by selected fields of professional competence clusters
 Source: German Statistic Authority (Statistische Bundesamt), German Work Agency

■ Skills shortage ■ Indication of skills shortage ■ No bottleneck

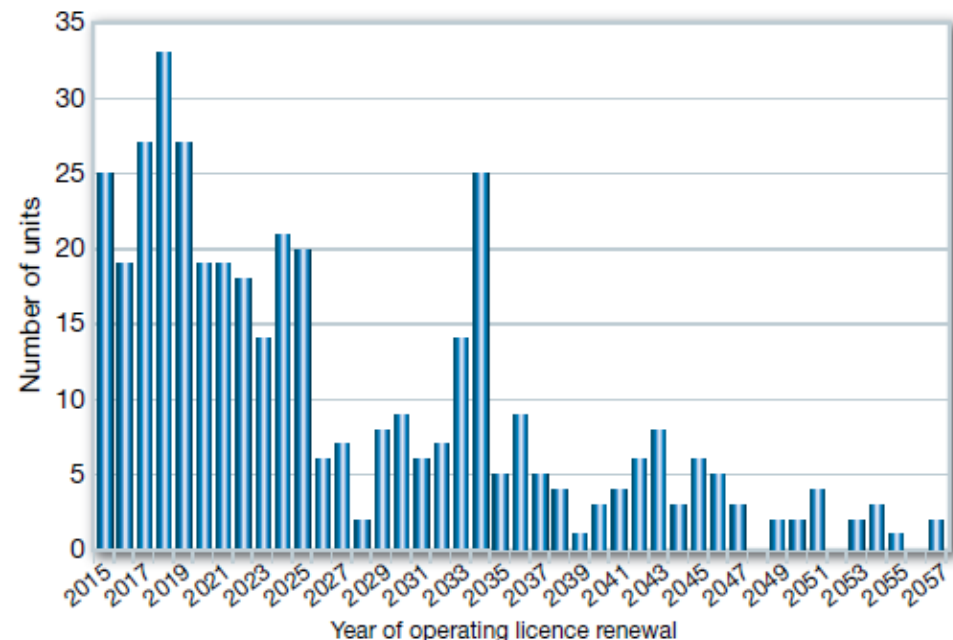
Demand

Energiewende (energy transition)

Ageing of power plant fleet

New topics: cybersecurity etc.

Collapse of electricity prices

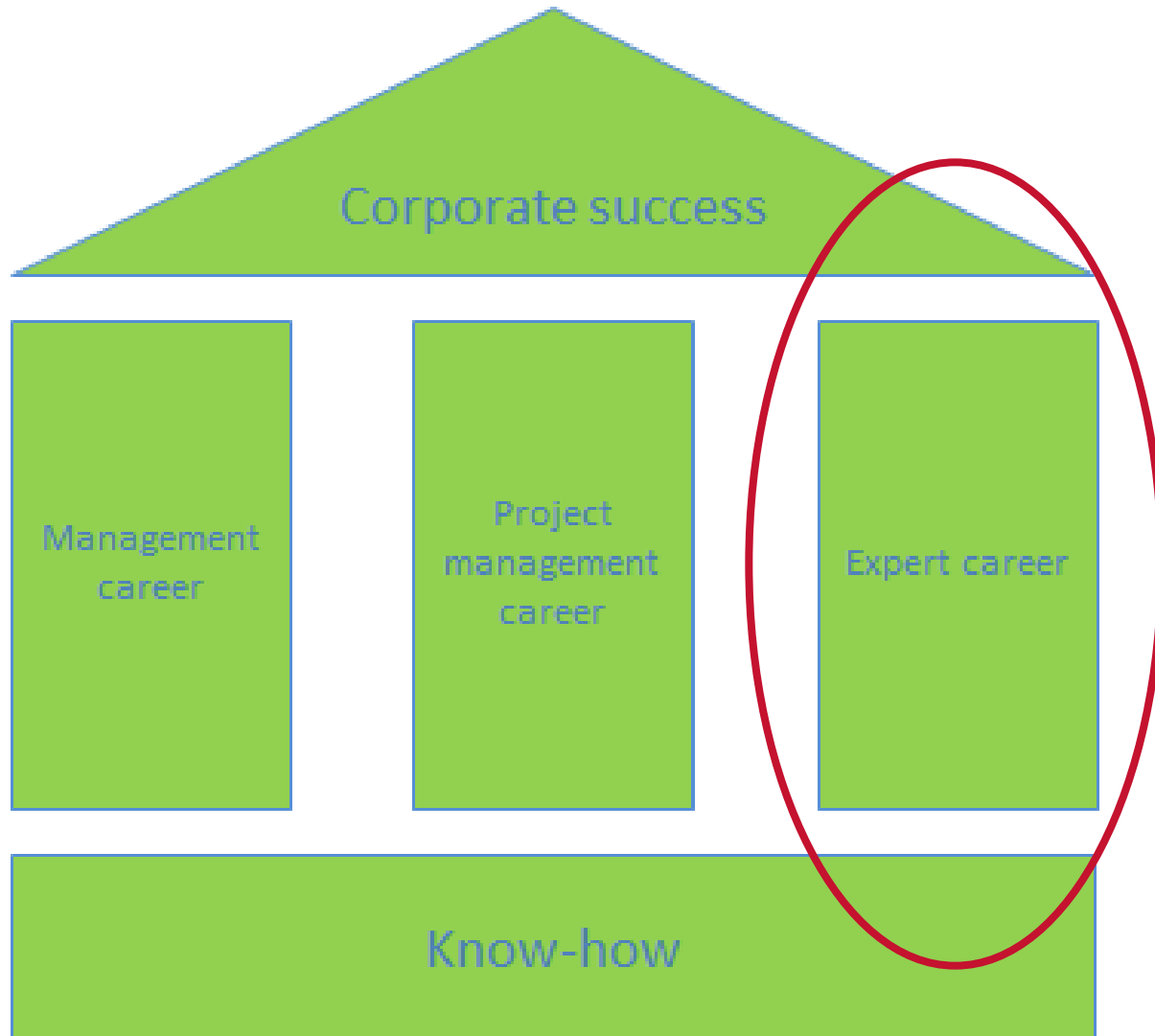


Expected schedule for nuclear plant lifetime renewals around the world
 (Based on data from IAEA/PRIS)





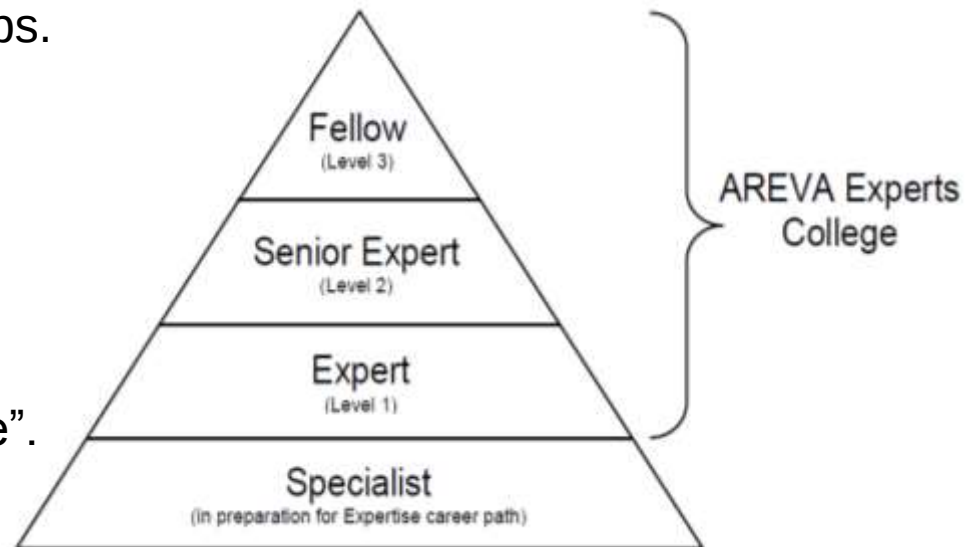
Do: AREVA Career bands





Do: AREVA expert career path

- ▶ These experts use and develop their skills during their assignments and put these skills to use in increasingly qualified jobs.
- ▶ The group has defined three levels of expertise based on the extent of the influence and reputation of the expert.
- ▶ All the Experts (all levels together) constitute the “AREVA Experts College”.
- ▶ Before the AREVA Expertise career path, each BU manages a pool of future experts, named “Specialists”.





Do: Expertise Committees responsibility & composition

Respon- sibility	Business Unit	Business Group	Group
Fellow			FELLOW Validate the progression from Senior Expert to Senior Fellow Validate the nomination for a new Senior Fellow Validate the confirmation of existing Senior Fellows
Senior Expert		SENIOR EXPERT Validate the progression from Expert to Senior Expert Validate the nomination for a new Senior Expert Validate the confirmation of existing Senior Experts	
Expert	EXPERT Validate the nomination for a new Expert Validate the confirmation of existing Experts		



Do: AREVA expertise main domains and sub-domains

Main Domains	Sub Domains
1 - Materials : properties and utilization	1.1 Metal alloys / metallurgy
	1.2 Ceramics including actinide based materials
	1.3 Polymers <i>including</i> plastics, organic materials e.g.: glues, paints
	1.4 Composite Materials <i>including</i> carbon fiber composites, glass fiber composites, metal matrix composites, ODS, ...
	1.5 Electrical and magnetic materials <i>including</i> insulation materials e.g.: superconducting, semi conducting, conducting materials...
	1.6 Civil works materials e.g.: concrete, cement...
	1.7 Nanomaterials
	1.8 Material and surface behavior / characterization techniques / material testing e.g.: aging, corrosion, irradiation, wear, embrittlement... / tensile testing, impact testing, fracture mechanics testing...
2 – Manufacturing technologies and processes	2.1 Powder metallurgy / ceramics <i>including</i> sintering, HIP e.g.: actinide powder
	2.2 Powder metallurgy / metals <i>including</i> sintering, HIP e.g.: ODS
	2.3 Metal parts manufacturing e.g.: casting, forging, stamping, rolling
	2.4 Composite structure manufacturing e.g.: winding, molding, weaving
	

Do: AREVA expert directory

The screenshot displays the AREVA expert directory website. The left sidebar contains navigation links for AREVA LIVE, Home, AREVA in Deutschland, Nachrichten, Tätigkeiten in Deutschland, Gemeinsame Aufgaben, Corporate Communication, Corporate Finance, Corporate Administration, Facility Management, Technical Network, Expertise, R&D, Patent Management, E&M, Coordination, Engineering, Planning, Market, Experts, General Policy for Managing Technical and EXPERT APPLICATION FORM, and Hinweis zur Suchfunktion!.

The main content area shows the 'Contacts' page with a 'List of Areva Experts' table. The table lists experts by domain and subdomain, sorted by expertise level. The table has columns for Profile, ACD, Last Name, First Name, Domains, Sub-Domains, Expertise level, and E-Mail.

Profile	ACD	Last Name	First Name	Domains	Sub-Domains	Expertise level	E-Mail
		Maier	Aaaa	5.2, 5.3	2	aaaa.maier@areva.com	
		Dupont	Bbbb	2.3	1	bbbb.dupont@areva.com	
		Huber	Cccc	10.1	1	cccc.huber@areva.com	
		Schmidt	Dddd	2.3	3	dddd.schmidt@areva.com	
		Laplace	Eeee	1.2,1.5	1	eeee.laplace@areva.com	
		Johnson	Ffff	2.3	1	ffff.johnson@areva.com	
		Wang	Gggg	4.1	2	Gggg.wang@areva.com	

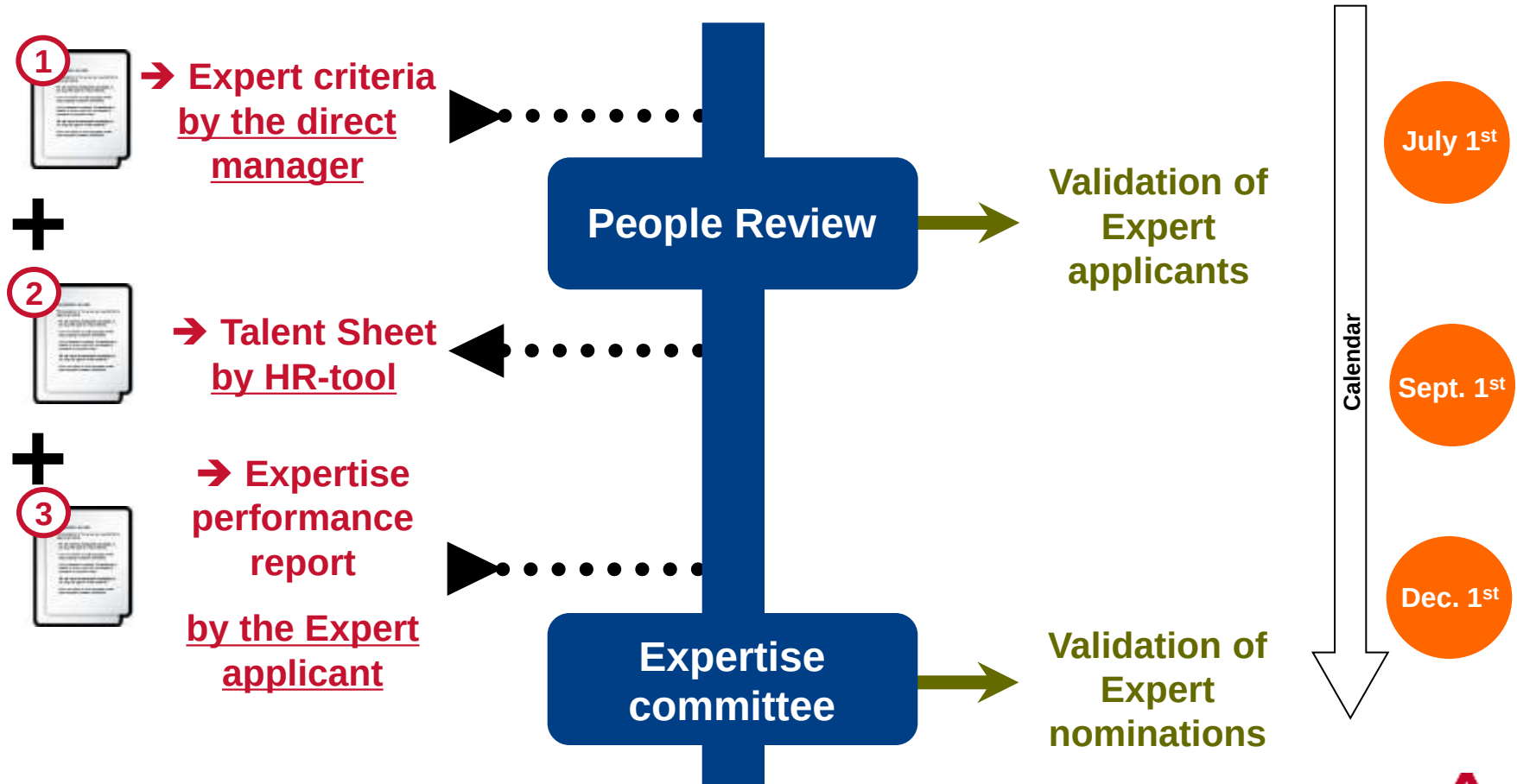


Do: Expert nomination process

Expert Applicant form : 3 sections

Committees

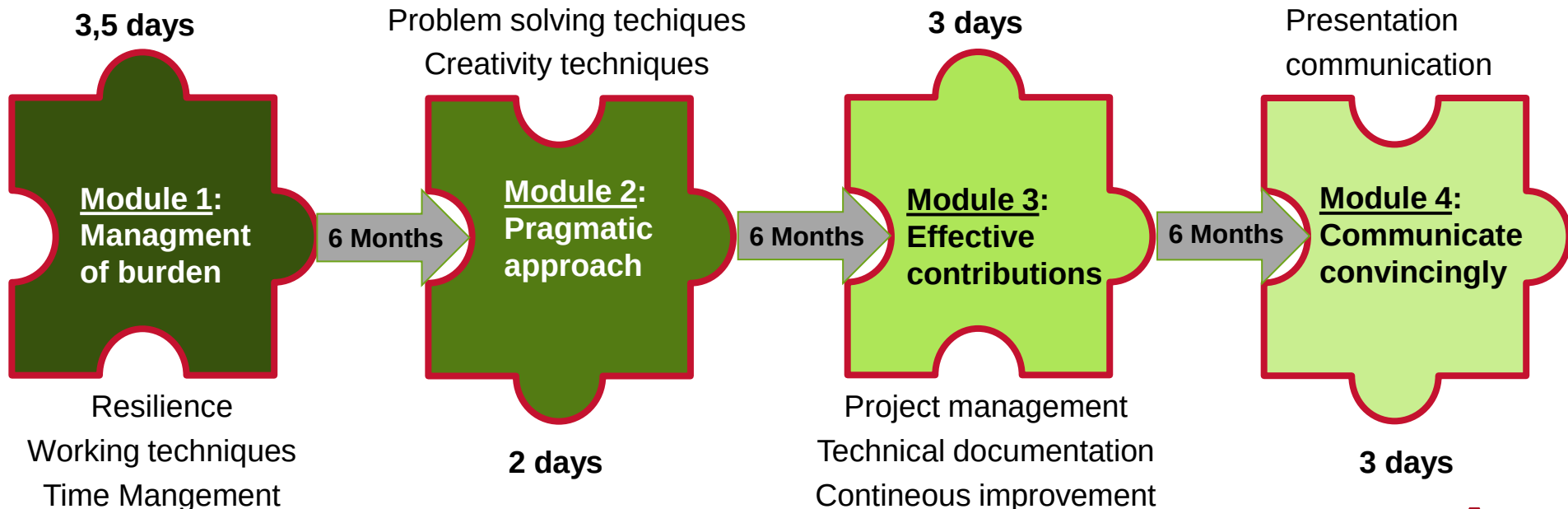
Output



Do: General Expert Program (GEP)

Modular curricula for experts and advisor targeted to

- ▶ strengthen social competences and management of career path related challenges
- ▶ Facilitate networking among experts
- ▶ Motivation, understanding and identification of concerned people with their chosen career path





Do: Experts Convention

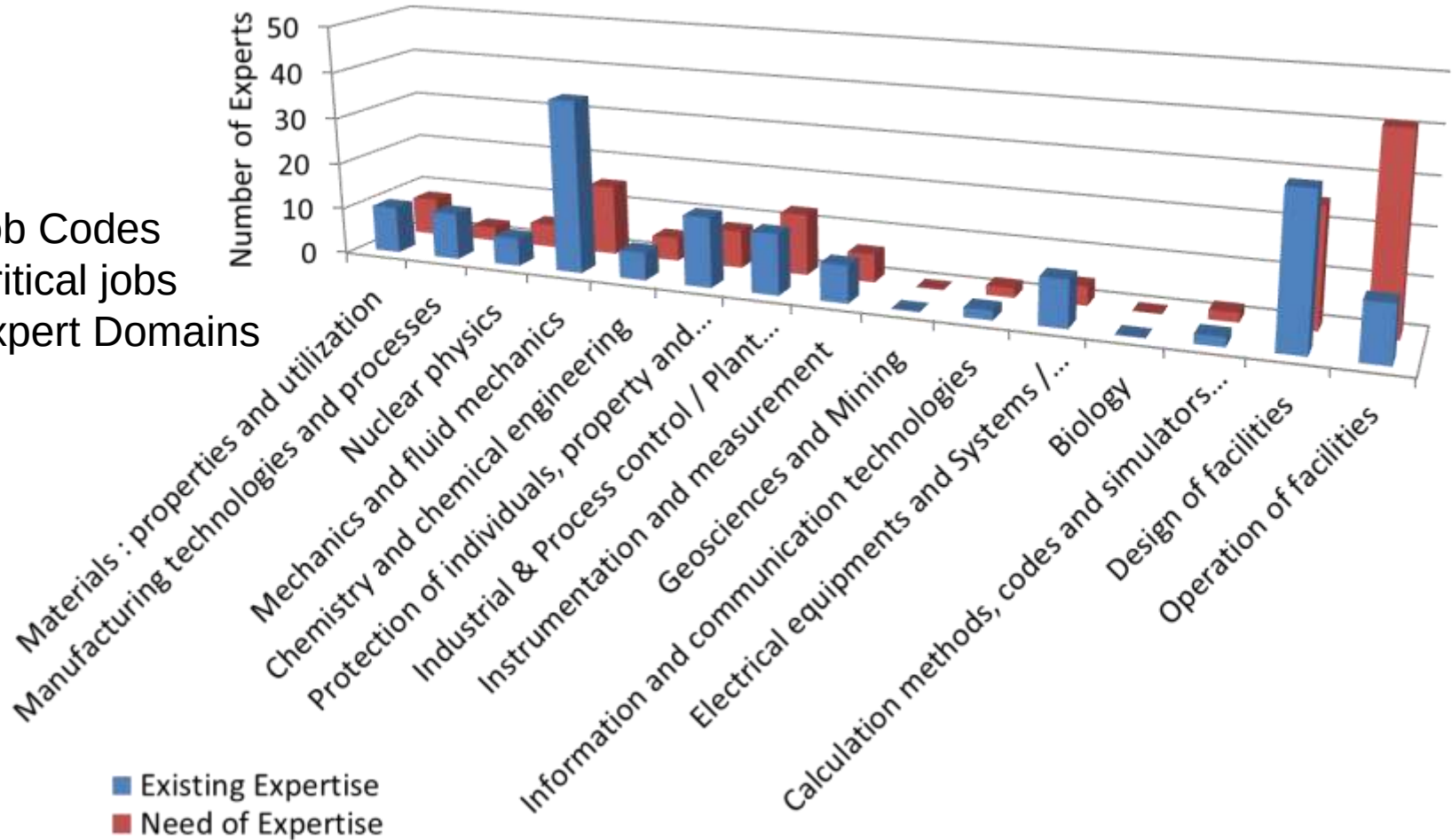


1. **Management seminar:** plenary sessions with top-down messages on expertise at AREVA, guest speaker on technical expertise, proceedings from working groups on the governance of the experts.
2. **Scientific Congress** (« barcamp » type): presentation by experts of case studies with lessons learned and Q&A, poster sessions of experts achievements, conclusions and recommendations from existing technical networks, round table discussions around major technical topics of transverse nature...
3. **Trade show:** booths presenting services to BGs ad BUs involving experts : innovation hub, business incubators, peer reviewing, IP protection, technology roadmapping, knowledge retention ...
4. **Site visits:** experts would have to choose from La Hague, the HRB, the EPR at Flamanville, DCNS...



Planning: Existing and required population

- ▶ Job Codes
- ▶ Critical jobs
- ▶ Expert Domains





Check: Interviews

- ▶ Project manager interviews
 - ▶ Expertise and staffing provided to projects o.k.?
- ▶ Line Management interviews
 - ▶ Risks of expertise lacks in BUs
 - ▶ Technological trends and R&D needs
- ▶ Sales Management interviews
 - ▶ Customer view of R&D needs
 - ▶ Covered by AREVA expertise ?
- ▶ Interviews of high level experts
 - ▶ Technological trends and R&D needs
 - ▶ Potential new expert candidates and promotions
- ▶ Company-wide survey on innovation culture



360° view of AREVA expertise management



Recent success of AREVA expertise management in fields beyond nuclear

- ▶ Ultrasonic testing facilities
 - ▶ used for quality control in the production of aircraft
 - ▶ used in the field of rail transportation systems
- ▶ LOHC (liquid organic hydrogen carrier) technology
 - ▶ longer-term, zero-loss hydrogen storage
- ▶ Smart grid solar project in Bavaria
 - ▶ impact of different storage technologies on the power in-feed into the regional grids



Retain and strengthen of the existing competencies in nuclear sector
Apply and develop these competencies to emerging market segments



Holistic expertise management allows AREVA to remain an international leader in changing environment



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