European
Commission

e-Leadership

Acquiring e-Leadership Skills

Fostering the Digital Transformation of Europe

Foreword

If Europe is to compete, grow, and generate jobs, it must address the current acute shortage of people capable of leading the innovation needed to capitalise on advances in information and communication technologies (ICT). Economic growth to create jobs requires that innovation opportunities are identified and effectively exploited. This in turn demands good e-leadership skills. These are the skills that can lead towards staff designing business models and taking advantage of innovation opportunities, making best use of ICT, and delivering value to their organisations.

The EU e-skills strategy is a key component of the drive to boost competitiveness, productivity and employability of the workforce by addressing the digital skills needs of the European industry. It helps to improve framework conditions for innovation and growth and for new digital jobs. And it makes sure that the knowledge, skills, competences, and inventiveness of the European workforce meet the highest world standards, and are constantly updated through effective lifelong learning. In 2013, the European Commission launched the „Grand Coalition for Digital Jobs" to intensify and accelerate its efforts to fill the digital skills gap.

Within the e-skills strategy, the development of e-leadership skills have benefited from the launch by the Commission of a dedicated initiative. This new initiative has been very much welcomed by leading stakeholders. It started initially in 2013 with a focus on large enterprises and was enlarged in 2014 to include also small and medium sized enterprises, gazelles and start-ups. It will be sustained and scaled up in the years to come. Very interesting and promising results have been achieved so far and numerous stakeholders are inviting the European Commission and Member States to increase their support to the development of e-leadership skills.

In particular, the report of the „European Policy Forum on Digital Entrepreneurship" (March 2015) on „the digital transformation of European industry and enterprises" recommends to further promote the importance of digital leadership and declares that e-leadership skills content should be developed and built into all general management training and educational programmes for business leaders and senior public officials.

There is a strong agreement about the urgency in the digital age of a joint Europe-wide effort to scale up the supply of e-leadership skills across all industrial sectors and enterprises.

Michel Catinat

Head of Unit
Key Enabling Technologies and Digital Economy
DG Internal Market, Industry, Entrepreneurship and SMEs
European Commission

The e-Leadership Challenge

Europe needs e-leadership skills for innovation and growth

In ensuring adequate growth and quality jobs, Europe is faced with a significant shortage of e-leaders, people capable of driving successful innovation and capitalising on advances in information and communication technologies (ICT). Economic growth to create jobs relies on innovation opportunities being identified and effectively exploited, and this in turn requires good e-leadership skills. These skills enable people to lead staff towards identifying and designing business models and exploiting key innovation opportunities, making best use of ICT and delivering value to their organisations.
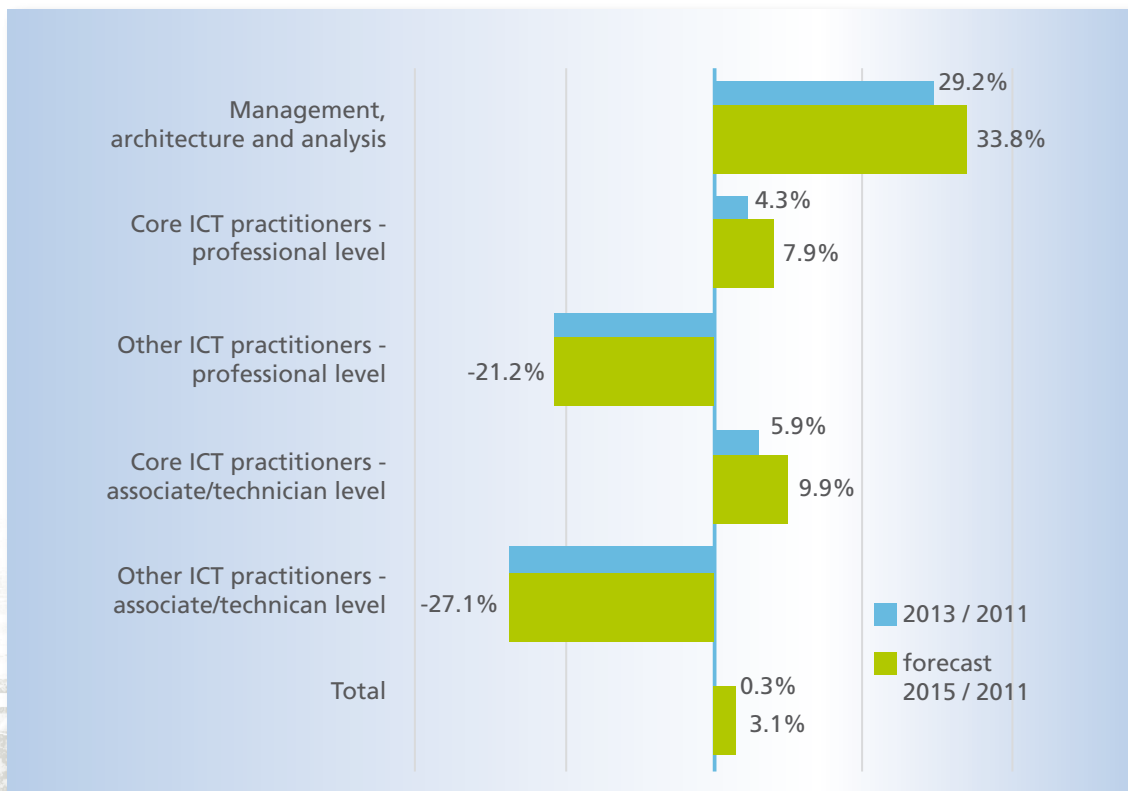
European Commission initiatives

The European Commission has already responded to widespread inadequacies flagged up by European stakeholders in the current availability of e-skills, skills relating to ICT. It has launched initiatives that promote e-skills in Europe and increased professionalism among ICT practitioners. The focus has moved on from bridging the gap between e-skills demand and supply, and now concentrates on the skills gap in e-leadership.

e-Leadership skills

e-Leadership skills include the knowledge and competences necessary to initiate and guide ICT-related innovation at all levels of enterprise, from start-ups to the largest of corporations, private and public.

Demand is growing throughout European industry for high-quality e-leadership that can exploit and organise ICT innovation to deliver business value. Research confirms a significant shortage across Europe is significant.

ICT workforce development in Europe in 2013 compared to 2011 and forecast for 2015

	2013 / 2011	forecast 2015 / 2011
Management, architecture and analysis	29.2%	33.8%
Core ICT practitioners - professional level	4.3%	7.9%
Other ICT practitioners - professional level		-21.2%
Core ICT practitioners - associate/technician level	5.9%	9.9%
Other ICT practitioners - associate/technician level		-27.1%
Total	0.3%	3.1%

Actions taken

Closing the e-leadership skills gap requires improvements in Europe's educational ecosystem, through:

- better processes for generating educational offers that meet the demands of stakeholders,
- encouragement for new course design and content,
- strengthened communication in the development and deployment of e-leadership skills.

New skills for new technology

Continuous innovation in ICT applications brings opportunities for competitiveness and growth for European enterprise, but also challenges Europe to provide the understanding and skills that will make it possible to grasp the opportunities.

The new wave of ICT innovation - with the confluence of social, mobile and cloud technologies, the rise of Big Data, and the new analytics to create value - comprises many trends that are expected to affect demand for e-leadership skills over the next decade.

The trends we identified have significant disruptive potential - rapidly advancing technologies, with broad impact, and significant value. These will dramatically change market balance, and profoundly affect the skills balance. Operational ICT skills will be less in demand, but there will be increased need for specialized design and deployment skills for new digital services. e-Leadership skills are needed to identify and exploit these new opportunities for business growth.

Technology trends

Mobility: The rapid penetration of mobile devices and technologies, and leveraging mobile solutions in the business environment.

Cloud computing: the disruptive delivery model of IT software and services, based on flexible and on-demand business models.

Big data analytics: new technologies and architectures that extract value efficiently from large volumes of a variety of data through high velocity capture, discovery, and/or analysis.

Social media technologies: within and outside enterprises, deploying social marketing techniques and facilitating collaboration and knowledge sharing.

Internet of Things: A dynamic global network infrastructure with self-configuring capabilities based on standard and interoperable communication protocols where physical and virtual "things" have identities, physical attributes, and virtual personalities, use intelligent interfaces, and are seamlessly integrated into the information network.

Secure systems: given the increasing dependency of European organizations on ICT systems, and the growing complexity of connected environments, there is strong demand for and diffusion of software and tools to ensure IT systems security at all levels.

Microelectronics and parallel systems: the increasing diffusion of multicore/manycore technologies is revolutionising the semiconductor industry and affecting the dynamics of all microprocessor end user markets. The move to parallelism poses challenges to software development and requires a change of tools, systems and methods of software design and development.

Convergence: Over and above the impact of each trend, the convergence of these new technologies has a cumulative effect on market structure; their joint exploitation places yet greater demands on e-leadership competence.
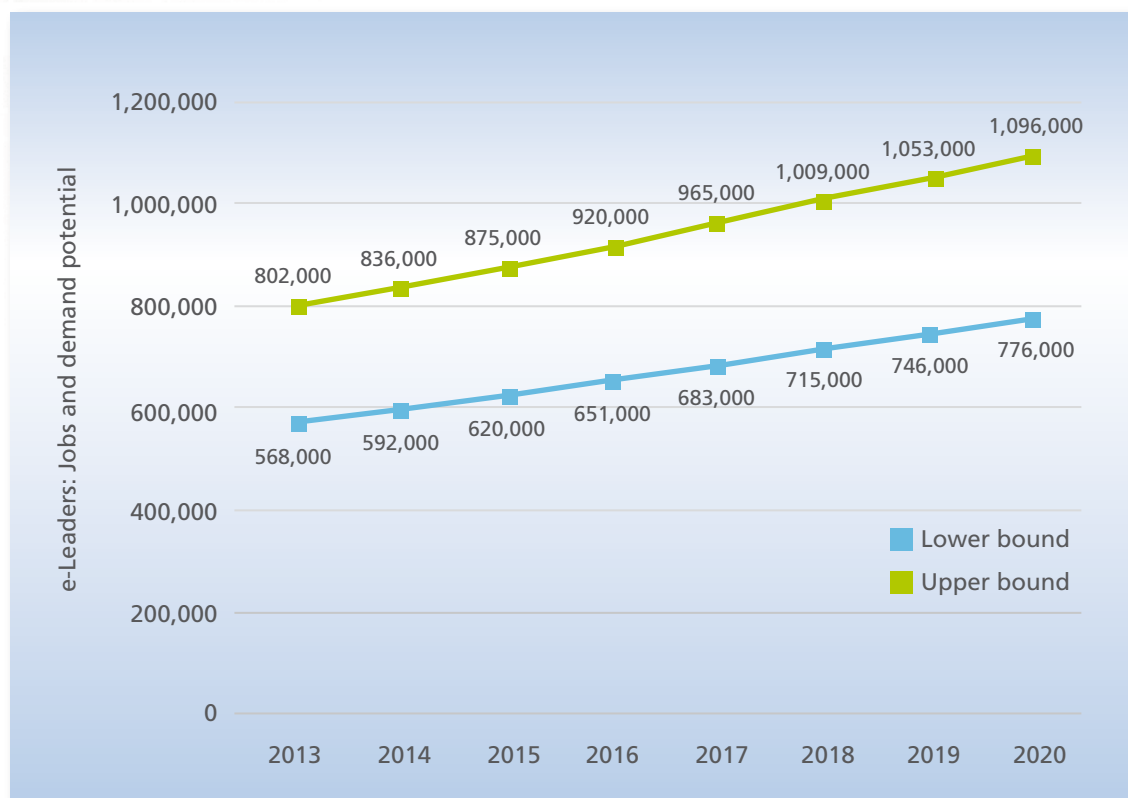
e-Leadership forecast

A survey of enterprises carried out in 2013 identified and quantified enterprises that successfully implemented innovative IT projects, and explored how many employees in and outside of IT departments were initiating and leading these projects. On this basis, the needs for a European e-leadership workforce in the EU28 are estimated at between 568,000 (number of persons successfully proposing innovative projects using IT) and 802,000 (leading projects for innovative projects using IT). About 40% of e-leaders are found within IT departments and 60% outside. E-Leaders in SMEs account for 70-75% of the total.

the most highly skilled ICT positions, for which such estimations exist. IDC and empirica have forecast demand for highly skilled ICT occupations to rise by an annual average 4.6% until 2020.

It seems reasonable to assume that demand for e-leadership is closely coupled with highest skilled ICT jobs.

Demand in 2015 is estimated to range from 620,000 to 875,000 by applying a 4.6% growth rate, to be between 776,000 and 1,096,000 in 2020.

e-Leadership job demand forecast for the EU28 2013 - 2020

Upper bound: 802,000 · 836,000 · 875,000 · 920,000 · 965,000 · 1,009,000 · 1,053,000 · 1,096,000

Lower bound: 568,000 · 592,000 · 620,000 · 651,000 · 683,000 · 715,000 · 746,000 · 776,000

y-axis: e-Leaders: Jobs and demand potential (0 – 1,200,000)

x-axis: 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020

Legend: Lower bound, Upper bound

With demand for 2013 established, forecasting for e-leadership demand must rely on estimated growth rates, because little market data is available for e-leadership vacancies or future hiring. We use an analogy with

Taking account of expansion (new jobs) demand and replacement (because of retirements etc.) demand, Europe will consequently need between 200,000 and 350,000 additional e-leaders by 2020, or between 40,000 and 70,000 per year.
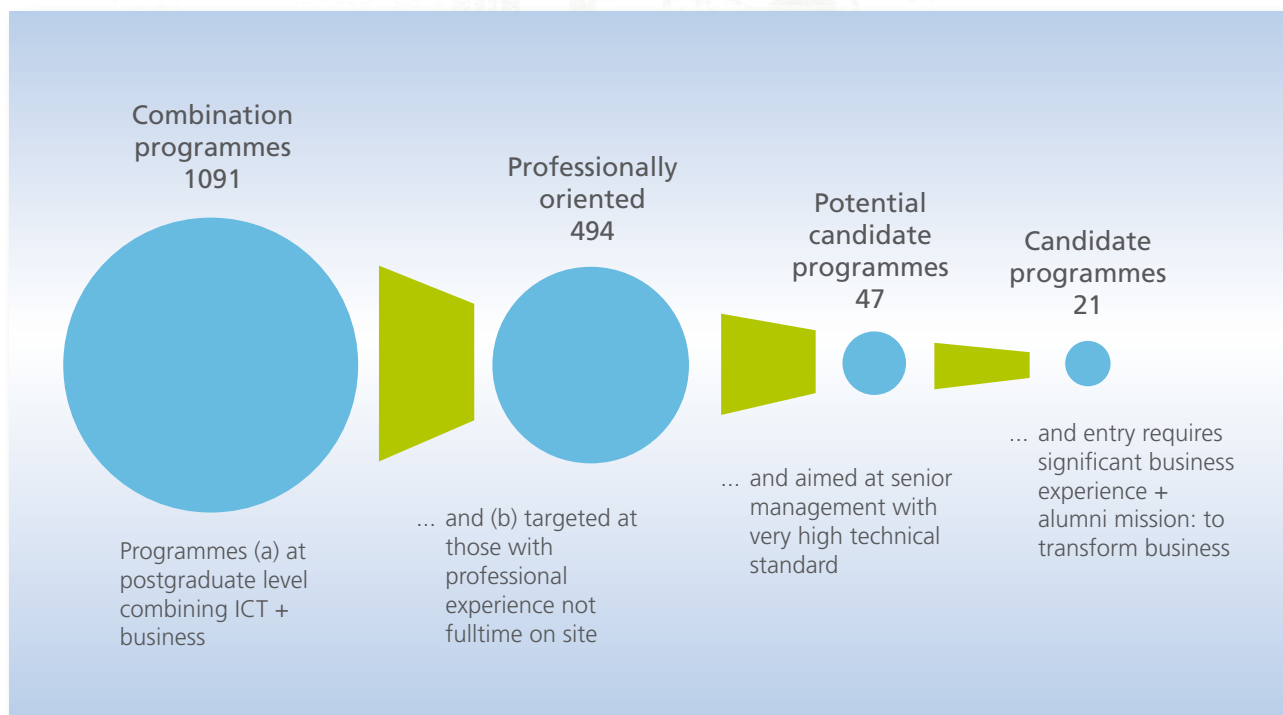
Europe needs thousands of new e-leaders every year

The European e-Leadership workforce has recently been estimated at between 570,000 and 800,000 individuals. In light of IDC and empirica estimates of an increase of an average 4.6% until 2020, the figure shows demand potential for 776,000 e-leaders in 2020, applying only conservative projections.

National correspondents in all Member States carried out a systematic search in early 2013 for e-leadership educational programmes on offer. The results show that Europe has been through a boom in cross-disciplinary programmes at Masters Level – combining business and IT, but mainly for career entrants. There is a job todo!

European e-leadership higher and executive education landscape 2013

Combination programmes 1091 — Programmes (a) at postgraduate level combining ICT + business

Professionally oriented 494 — ... and (b) targeted at those with professional experience not fulltime on site

Potential candidate programmes 47 — ... and aimed at senior management with very high technical standard

Candidate programmes 21 — ... and entry requires significant business experience + alumni mission: to transform business

On these estimates Europe will need at least 315,000 additional e-leaders by 2020, including replacement demand, or 40,000 - 73,000 per year. This presents a strong challenge to the current educational ecosystem.

Programmes in short supply

Only 21 programmes were found in Europe that deliver e-leadership programmes as stakeholders had defined them – delivering the capability to lead experienced executives in business transformation.

The e-leadership challenge

Demand is growing throughout Europe to accelerate innovation, strengthening competitiveness, driving growth in the economy and creating jobs. A major factor in innovation performance is the strength of leadership, particularly to take advantage of new opportunities in ICT. But the supply of e-leadership skills is well below demand, and a coordinated response is needed.

Responding to Demand

Objective and approach

The e-Leadership Initiative was launched by the European Commission, with an initial focus on e-leadership skills for large enterprises. The objective is to develop, demonstrate and disseminate European guidelines and quality labels for new curricula that foster e-leadership skills.

The guidelines were developed using results from surveys, stakeholder input, and analysis of best practice in cooperation with world class business schools. The guidelines have been used across Europe, and have gained wide acceptance, as well as proving useful to stakeholders.

Freddy Van den Wyngaert
VP, CIO, AGFA ICS

Agfa has implemented a major and very successful transformation of its business and is determined to continue this success by ensuring executives bring with them the best in e-leadership skills.

Target improvements

Major improvements will flow from scaling up best practice in communication of market requirements, content transparency and the award of quality label. The focus is on e-leadership skills for people in "resource-rich" positions in enterprises, where executives are able to mobilise significant human and other resources. Such executives, including CIOs and related C-level posts, guide the top echelons of the human resources of an enterprise, and take direct responsibility for business, innovation and competitiveness.

Quality can easily be maintained if demand-side understanding of skills requirements at the workplace is fed back to providers. Feedback from alumni will help maintain attractiveness of delivery and content and provide additional information on developing leadership requirements in work.

Leading large enterprise innovation

The first phase of the e-Leadership Initiative focuses on the leadership needs of top decision-makers in larger enterprises. These executives oversee portfolios comprising both well-defined and emergent innovation opportunities. Their pursuit of innovation requires engaging highly qualified staff, many of whom need assistance to reach the necessary excellent understanding of ICT and its potential value.

Małgorzata Ryniak
VOLVO, Information Technology

Volvo is investing in our IT people so that they are being empowered to lead for us. The greater quality and coherence in the offers of e-leadership education in Europe the Commission has initiated is very attractive to us.

Specific skills include the rapid, disciplined assessment of business cases and risks, while encouraging the creativity needed to design new business models and exploit innovation opportunities.

European Commission action for closing the e-Leadership skills gap

As part of the Commission e-Leadership Initiative, guidelines have been developed for curricula to deliver e-leadership in enterprises. The approach supports the characterisation of those skills required for e-leadership in enterprise decision-making, and the definition of learning outcomes appropriate to action in key roles, up to C-level. Curriculum profiles are generated that define the target content and educational experiences to be included in e-leadership curricula offered by institutions of higher and executive education.

Cristina Alvarez
CIO Telefonica Spain

The Commission initiative to improve the supply of e-leadership competences is of great interest to us; we expect to make significant use of programmes which deliver these competences.

Implementing the guidelines provides transparency to enterprises seeking e-leadership and to professionals wishing to engage in further education with the prospect of more responsibility for and success in business transformation.

Pascal Buffard
President of CIGREF and Chairman of AXA Technology Services

For CIGREF, the „e-leadership" theme is a top 10 challenge for leaders and managers towards 2020. Leading digital transformation means first the capability to develop a strategic vision related to digital with all stakeholders. CIGREF encourages the intensification of actions related to the promotion of e-leadership in Europe towards all economic actors.

Demonstrations with different business schools and universities in Europe showed in practice how curriculum profiles, combined with quality criteria, can help evaluate programmes provided by higher educational institutions and business schools.

Encouragement has been give to developing and improving up-to-date educational offers that can increase the supply of experienced and highly qualified leaders in ICT-based innovation in the private and public sector.

Jeanne Bracken
General Manager & Publisher, LID Editorial Spain

A key is flexible and collaborative learning formats. Let's be realistic, we're unlikely to create innovative leaders with traditional methodology!

The online opportunity - MOOCs for e-leadership

Innovation in teaching can help to scale up delivery of e-leadership skills while keeping programmes affordable, and online course provision is an attractive alternative.

However, the results are not yet fully visible of the investment to date in "massive open online courses" (MOOC) in fields related to e-leadership in Europe and the USA,.

Most universities have a programme at Master's level on ICT and management, but even in the USA these are taught traditionally, on site.

MOOCs today offer courses at a relatively elementary level, typically with learning objectives that have remained stable for years - not a characteristic of ICT fields.

There are still very few online programmes that combine ICT and business skills. Most of the offer is of isolated, short, quick-fix "pills" lasting under an hour. These are neither integrated into nor provide credits for larger programmes.

Foundations

Best practice in e-Leadership education

The guidelines for e-leadership curricula have been built on existing European and world best practice. A key input has been the excellent EuroCIO programme for executive education. A hierarchy of modular programmes deliver leadership and professional qualifications.

Best practice in e-leadership education from EuroCIO
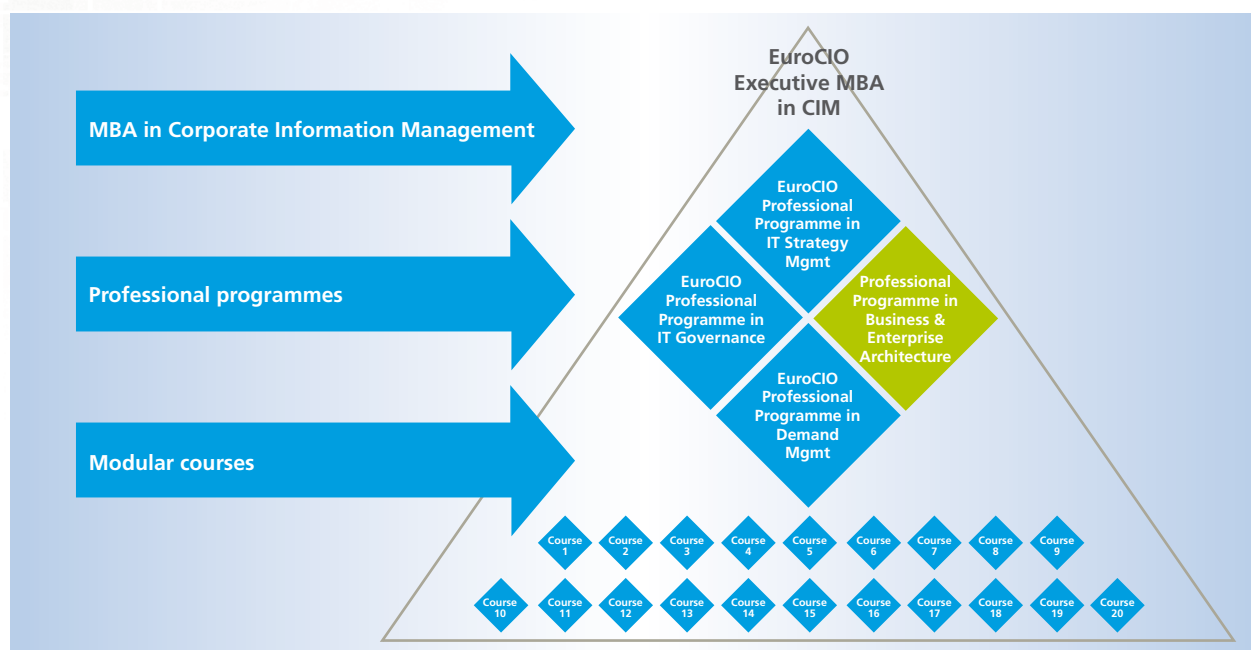
- reward life-long learning, enhancing skills among those already employed and with experience, especially for enterprise architecture, strategy and innovation;
- ensure programmes on offer are based on stable but flexible curricula which are vendor neutral.
- encourage academia, business and public sectors to engage regularly and focus on complementarities rather than differences;
- allow academia to ensure the relevance and durability of the curriculum approach;

EuroCIO Executive MBA in CIM

MBA in Corporate Information Management

Professional programmes

Modular courses

EuroCIO Professional Programme in IT Strategy Mgmt

Professional Programme in Business & Enterprise Architecture

EuroCIO Professional Programme in IT Governance

EuroCIO Professional Programme in Demand Mgmt

Course 1, Course 2, Course 3, Course 4, Course 5, Course 6, Course 7, Course 8, Course 9
Course 10, Course 11, Course 12, Course 13, Course 14, Course 15, Course 16, Course 17, Course 18, Course 19, Course 20

In the education approach, curriculum development results from negotiation in a committee of industry representatives and business schools. Individual committees deal with specific programmes. New techniques have been deployed to scale up this programme to supply the numbers Europe requires.

INSEAD Curriculum Guidelines

The e-Leadership Initiative builds on the conclusions of the INSEAD study „European e-Competence Curricula Development Guidelines" comprising policy and institutional guidelines across the full e-skills domain. The policy guidelines are to:

- encourage industry to strengthen personal development and provide incentives for life-long learning e.g. by inclusion in performance rating.

The institutional guidelines for successful curriculum development recommend:

(1) creating an appetite among potential students;
(2) ensuring relevance to industry and potential employers;
(3) designing curricula as a set of modules, making them easy to combine with other curricula and fostering multi-disciplinary approaches;
(4) anticipating graduates' need to keep knowledge up-to-date;
(5) monitoring the curricula design and delivery process for constant improvement.

The approach to scaling-up e-leadership skill provision takes full account of these guidelines. The e-Leadership Initiative elevates the INSEAD ideas to the level of a portfolio of new curricula delivering e-leadership skills, embedded in a sustainable, living quality assurance framework. This framework ensures an ongoing match between course content and innovation and leadership requirements across economic sectors and all sizes of organisation.

The European e-Competence Framework

The multi-skill concept of e-Leadership and its relevance for future economic and social development in the European economy has been widely confirmed by stakeholders in the field.

The curriculum profiles respond to stakeholders' insistence that curriculum guidelines should leverage the improved market transparency of links to the e-Competence Framework. Each curriculum profile is mapped to the European e-Competence Framework, and makes clear which e-CF competences are improved by compliant programmes.

Guidelines for new curricula

Scaling up supply of e-leadership skills

Scaling up the supply of e-leadership skills requires mechanisms that address a lack of transparency in the content of programmes offered. Programmes are not easily compared, so trust in offers is limited. Recognition from a trusted source is a well-tried mechanism to engender trust, unleash action, and accelerate the flow of e-leadership skills.

Invigorating the e-skills development ecosystem

Scaling up the approach requires a clear analysis of locations and processes where improvements in transparency and comparability can be provided. It also needs clear specification of how alignment to requirements of innovation leadership in the large enterprise workplace can be guaranteed, and of how clear signals can be given that certain educational offers deliver against these requirements. The e-leadership skills development ecosystem provides an appropriate analytic framework.

Summary of the roles of transparency, comparability and trust in supporting programme recognition

Create transparency

Create comparability

Create trust

Provide recognition

Increase educational supply; accelerate flow of e-Leadership skills
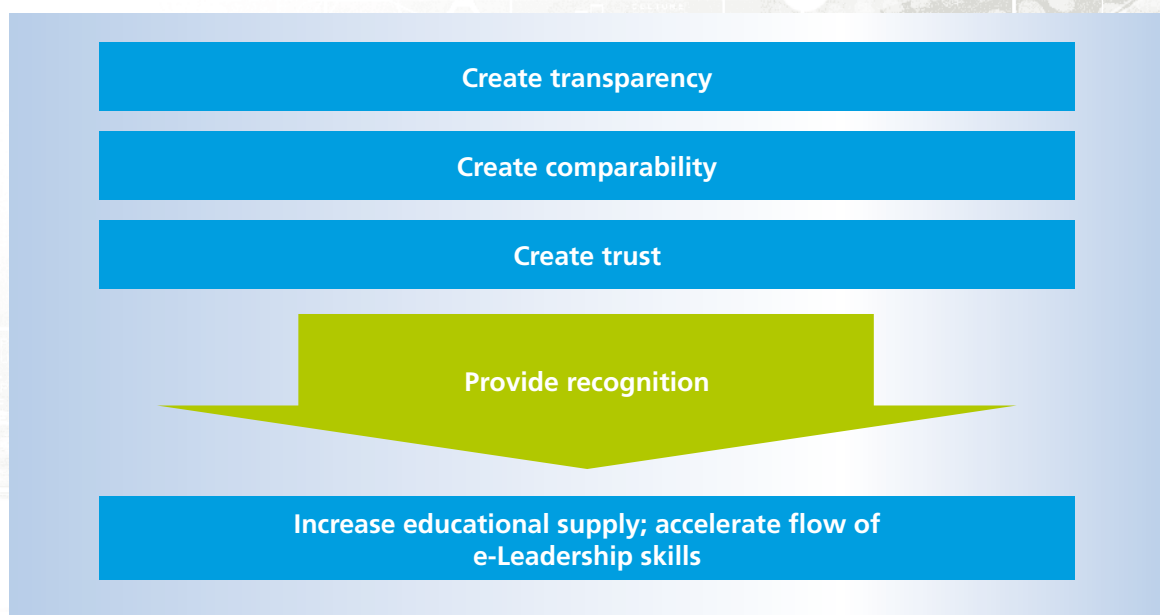
Prof. Dr. John Board
Dean of Henley Business School

Henley, with its strong research and teaching tradition, has made direct contributions to the e-leadership initiative, adapting key programmes to meet requirements set by e-Leadership Curriculum Profiles.

The guidelines and quality labels centre on a portfolio of e-leadership curriculum profiles, flanked by quality assessment and stakeholder interaction, incorporating effective feedback channels. Curriculum profiles bring

Eduardo Vendrell
President, Conferencia de Directores y Decanos de Ingeniería Informática and Professor at Universitat Politècnica de València

In my role as President of the Spanish Council of Deans of Informatics Degrees (CODDII), I'm committed with the e-skills and e-Leadership initiative, supported by the European Commission.

transparency and comparability of educational offers to stakeholders in the ecosystem. Institutions of higher education and business schools are provided with the means to align programme learning outcomes to corporate demand for skilled executives in a way transparent to employers and future e-leaders.

The e-Leadership Curriculum Profile

The e-leadership curriculum profiles, which are key to the guidelines on new curriculum development, are developed by a team of academics and industry representatives supported by education experts. The profiles provide comparability across programmes – bringing transparency into the e-skills ecosystem. They describe and expose demand for e-leadership skill sets, and help curricula to keep up with a changing environment.

The profiles are simple in structure and require few resources for maintenance and use - in line with the economic climate. Solutions today must be lightweight!

The e-leadership skills development ecosystem

SUPPLY SYSTEM	GUIDELINES and QUALITY LABELS	DEMAND SYSTEM
Higher & Executive Education Institutions Programmes	Stakeholder Interaction Feedback Channels / Portfolio of Curriculum Profiles / Quality Criteria & Assessment	Enterprises - seeking leadership for innovation programmes using ICT
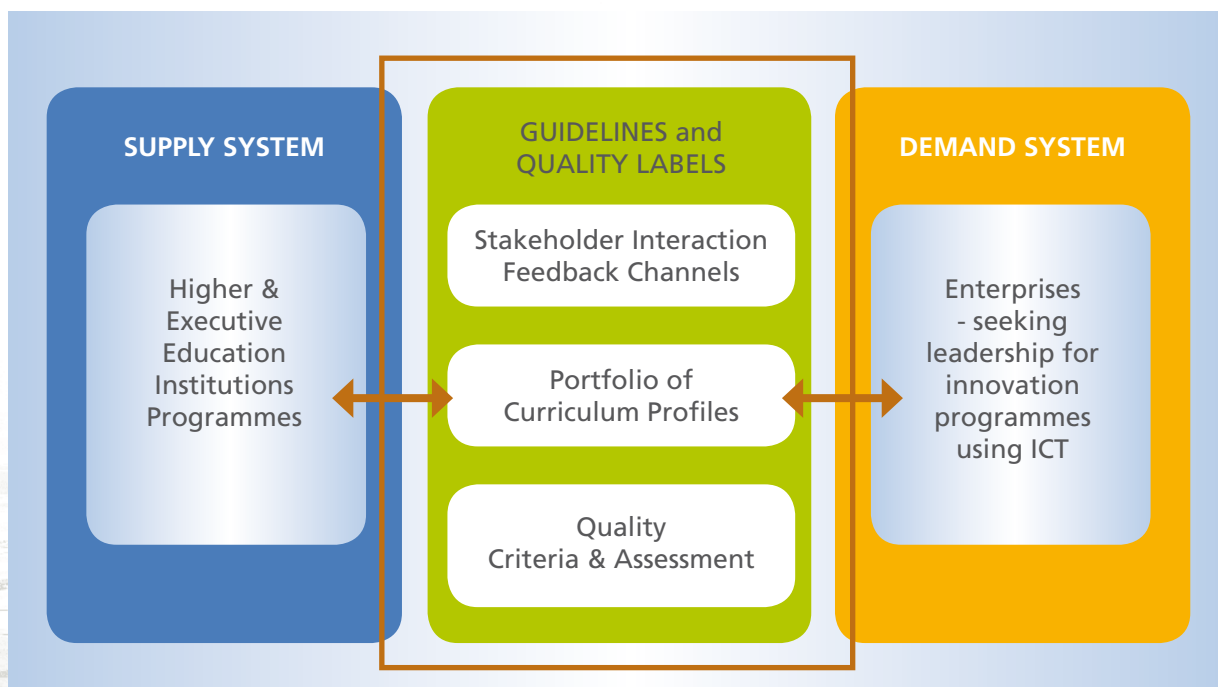
Silvia Leal
Academic Director, IE Business School

IE Business School was among the first in Europe to apply the e-leadership guidelines to our higher education courses and we strongly recommend that other universities and business schools use the e-Leadership Curriculum Profile approach.

Prof. Dr. Renaud Cornu Emieux
Directeur, l'Ecole de Management des Systèmes d'Information de Grenoble, Chair Orange – GEM « Digital Natives »

For the coming year, the chair "Digital Natives" Orange-Grenoble Ecole de Management and EMSI will lead the development of modules and certificates in e-leadership for students of the main curriculum of Grenoble Ecole de Management (GEM). These modules and certificates will be for students and working professionals.

Adam Dzidowski
University of Technology Wroclaw, Faculty of Computer Science and Management Wroclaw University of Technology

The most important part of the e-leadership package is its reflexive potential and how it can be used to pose the right questions about the existing programmes.

Components of an e-leadership curriculum profile

Title	Rationale	Sample Roles
Meaningful name of the curriculum Profile	Short description of relevance and demand	Indication of typical roles in working environments

Core Content	Learning Outcomes	Competences
The main topics related to this type of profile	Knowledge, skills and competences	Mapped to e-Competence Framework

Example of an e-leadership curriculum profile: Business Enterprise Architecture

e-Leadership Curriculum Profile

Title	Business and Enterprise Architecture
Market Demand	
Rationale	Companies, particularly those with international operations, need to deal with complexity since this increases risks and costs, and to be agile in reacting to market changes. Designing a business to achieve these goals needs both business and ICT architectural skills. The Business & Enterprise Architecture curriculum addresses these challenges and aims to increase the capability of experienced professionals to engage with key stakeholders in linking strategy, architecture, change and value. The focus is both on developing professional competence and enhancing behavioural skills.
Entry Profile	Programmes based on this profile typically require participants who already have practical experience in IT enabled business change roles.
Core Content	The lifecycle of a business and enterprise architecture as an enabler of business strategy and execution, with the links to inter-related functions: • Strategy & Enterprise Architecture • Enterprise Architecture Solutions • Implementing Enterprise Architecture
Learning Experience	• Combine theory instruction with facilitated group review of best practices strongly set within an organizational context • Provide opportunity for students to use experience and insights from the curriculum in their working environment
Sample Target Roles	Enterprise Architect Business Architect
Learning Outcomes	
	• Create architectural designs that help innovate business and operating models • Exploit digital trends to develop target model architectures • Envision and drive architectural change for business performance • Influence architectural stakeholders across boundaries • Build architectural capability and lead inter-disciplinary staff

e-CF competency	Level
A.1 IS and Business Strategy Alignment	4
A.5 Architecture Design	5
A.7 Technology Trend Monitoring	4
A.9 Innovating	4
E.7 Business Change Management	4

e-Leadership Understanding

A.3 Business Plan Development
B.6 Systems Engineering
C.3 Service Delivery
E.2 Project and Portfolio Management
E.3 Risk Management
E.9 IT Governance

European e-Competence Framework

Each curriculum profile has a name and a concise justification of its place in the portfolio, listing the roles it qualifies for, and summarising content.

The core of each profile comprises the learning outcomes from completion: the knowledge, skills and competences which a programme delivers to shape e-leadership skills.

All the profiles developed in the first phase of the initiative deliver the core competences for e-leadership in large corporations.

Learning outcomes are fully referenced to the e-Competence Framework, to offer maximum transparency and to leverage existing self-assessment and human resources planning.

Aligning programmes to curriculum profiles will accelerate skills flow, by meeting the requirements of stakeholders for:

- inspiring higher and executive education to develop new programmes
- leveraging academic expertise – don't tell them how to teach,
- ... leave them to incorporate the latest research
- exposing the results wanted, the learning outcomes in demand.

Adoption of the Guidelines and supply of conforming programmes will

- impact executive training and hiring decisions
- provide transparency to aspiring e-leaders and guide choice of further education.

The approach takes full account of different sets of e-leadership skills for different roles.

The e-leadership portfolio

Industry and higher education have provided version 1 of three profiles:

- Business and Enterprise Architecture
- Information Security Governance and
- Innovation and Transformation through ICT.

Marco Ferretti
C.I.N.I National Consortium of Italian ICT universities – ICT competencies Lab and Professor, University of Pavia

The CINI Lab on ICT competencies envisions the possibility to launch the collection of a wide set of assessments of university programmes against the e-leadership curriculum profiles and is ready to further support the e-leadership initiative.

Curriculum profiles adapt to shifts in requirements, and new profiles are generated where scope proves too narrow. Programme providers can analyse their offers and use a profile to adapt them, or design them from scratch, using a simple self-evaluation tool. The prototype of a tool is available to support the structured comparison of a single education programme against a curriculum profile, building on quality criteria and producing an assessment report on an education offer.

A higher and executive education institution can evaluate its programme and publish results on the web to inform aspiring executives and management recruiting or training e-leaders.

For added confidence, a quality label has been defined based on lightweight independent assessment, reusing existing certification.

Filomena Ferrucci
Professor, Università di Salerno, Fisciano (SA),

The University of Salerno has activated a new study programme to address the needs of professionals for competencies both in information technology and business which enable them to drive change and innovation, to be e-leaders. This programme meets the e-Leadership guidelines, showing it addresses industry requirements.

The Quality Label for e-Leadership

The Quality Label for e-Leadership education comprises criteria, processes and a label management system embedded in a governance structure with light management. Independent quality assessment takes full account of existing accreditation, and maximum use is made of previous assessments and investigations of national systems of accreditation.

Birgit Hanny
Board Member, ASIIN

ASIIN supports the e-Leadership initiative and its Curriculum Profiles as instruments for developing high quality education offers at academic level.
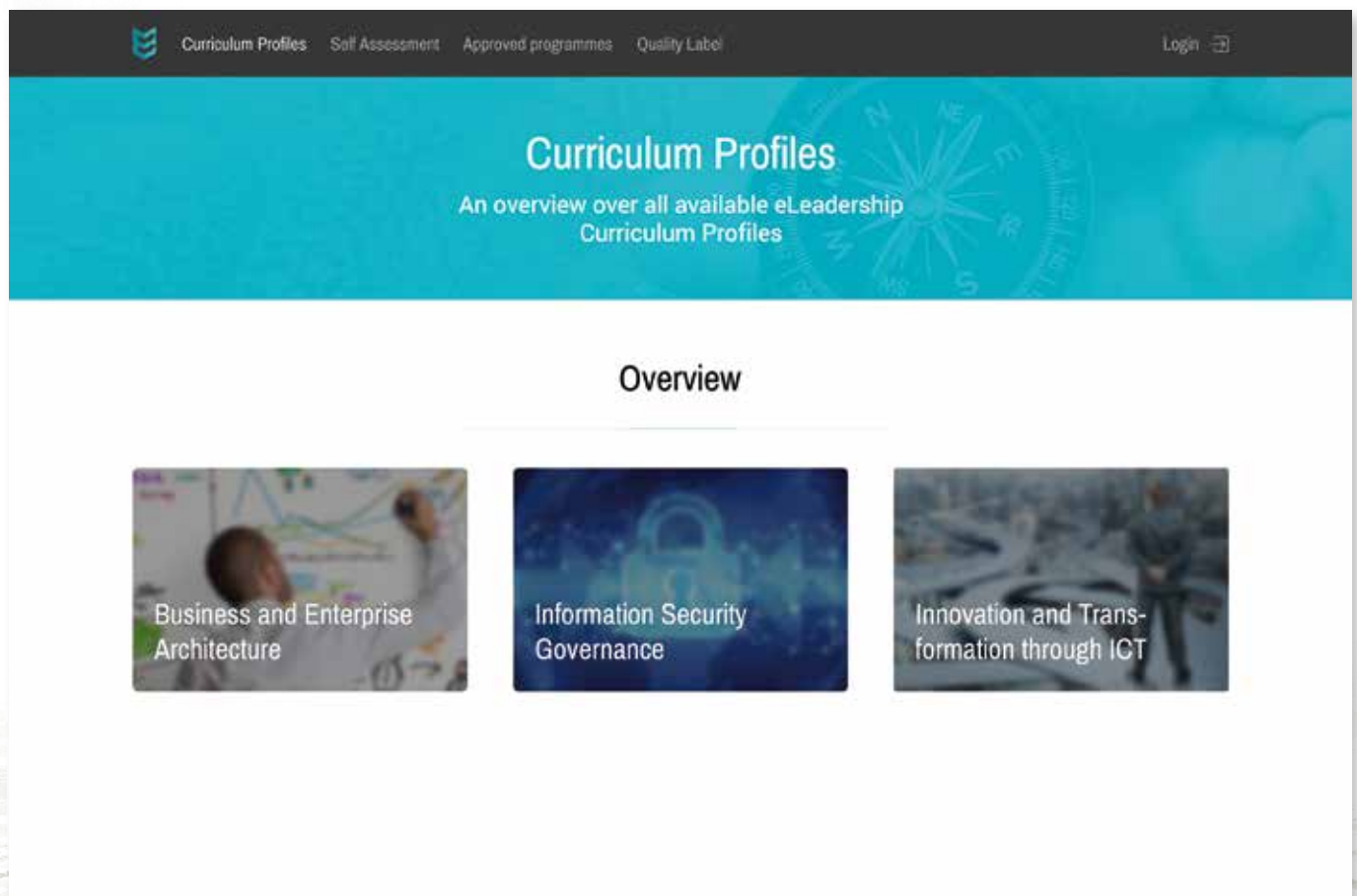
A prototype for online transparency in education

The e-Leadership Curriculum Profiles

A prototype web environment demonstrates the guidelines and the new approach to curriculum transparency and comparability. This environment can support recognition, stakeholder interaction and feedback with a minimum of administration.

The diagram shows how three curriculum profiles could be presented so that anyone interested can access detailed specifications and full understanding of content.

The prototype web environment supports interactive presentation of each curriculum profile in the portfolio. Each profile conveys clear learning outcomes, and has a rationale and core content. It specifies the appropriate learning experience, shows the link between learning outcomes and the corresponding e-CF competency, and specifies under „e-Leadership understanding" the subject-matter the e-leaders must understand well enough to lead others in performance, rather than to perform themselves.

Prototype presentation of a portfolio of e-leadership curriculum profiles

Prototype presentation of an e-leadership curriculum profile

Publishing the complete curriculum profile increases transparency, and helps ensure it is kept up to date.

To reduce administrative overhead, logos and all material are provided directly by the educational institutions. Programme owners also carry out evaluations, using simple tools to map their programme to a Curriculum Profile.

Employers and alumni can register to engage in collaborative improvement. Programme evaluations – and curriculum profiles - are exposed to feedback from stakeholders and knowledge holders.

The target is moving. With this direct feedback, maximum agility is maintained so that necessary changes can be quickly triggered.

Transparency through recognition

To ensure transparency of individual educational offers, institutions of higher education and business schools might register and submit an evaluation of their programmes against a curriculum profile. Each element of the mapping of individual programmes to a profile can be captured as fully or partially compliant, and this delivers transparency and builds a strong framework for comparability of educational offers.
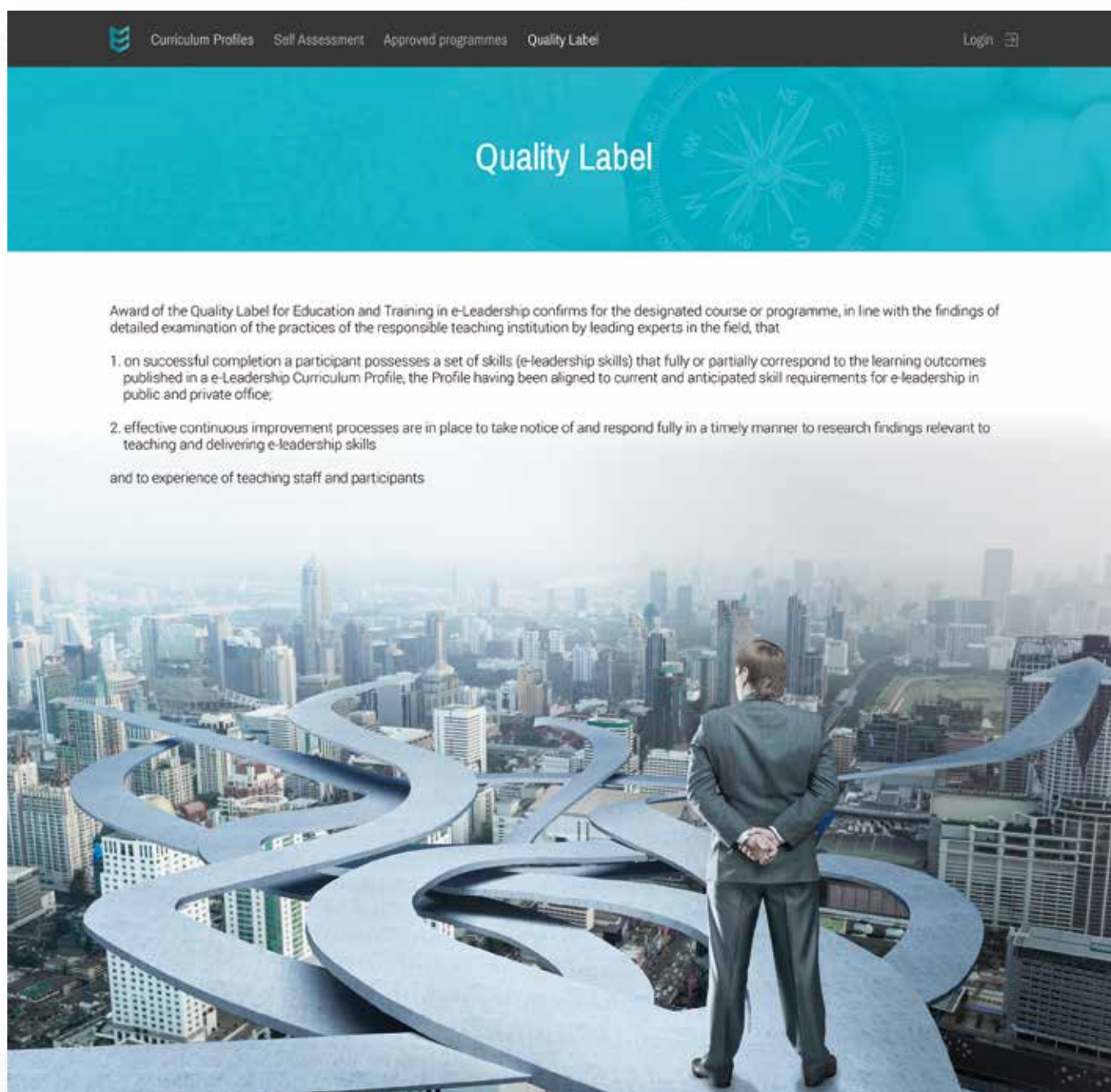
Presenting the quality approach

In providing a quality label, the claim or standard for the measurement must be clear. The claim for programmes that are compliant with a recognised e-leadership curriculum profile is easy to accept.

Prototype presentation of a self-evaluation tool

Prototype presentation of a quality claim

Curriculum Profiles   Self Assessment   Approved programmes   Quality Label   Login

Quality Label

Award of the Quality Label for Education and Training in e-Leadership confirms for the designated course or programme, in line with the findings of detailed examination of the practices of the responsible teaching institution by leading experts in the field, that

1. on successful completion a participant possesses a set of skills (e-leadership skills) that fully or partially correspond to the learning outcomes published in a e-Leadership Curriculum Profile, the Profile having been aligned to current and anticipated skill requirements for e-leadership in public and private office;

2. effective continuous improvement processes are in place to take notice of and respond fully in a timely manner to research findings relevant to teaching and delivering e-leadership skills

and to experience of teaching staff and participants

Comparing recognised programmes

Once a programme has been evaluated and the evaluation accepted, it can be presented in full transparency making its compliance with the curriculum profile transparent to all interested parties.

Prototype presentation of a recognised e-leadership programme

Curriculum Profiles   Self Assessment   **Approved programmes**   Quality Label   Login

Executive MBA
Detailed overview over an eLeadership Programme
by Technical University Munich (TUM)

Overview

e-Leadership Programme Profile: Business and Enterprise Architecture

Institution: Technical University Munich

Technische Universität München (TUM) is one of Europe's top universities. It is committed to excellence in research and teaching, interdisciplinary education and the active promotion of promising young scientists. The university also forges strong links with companies and scientific institutions across the world. TUM was one of the first universities in Germany to be named a University of Excellence. Moreover, TUM regularly ranks among the best European universities in international rankings.

Website: www.tum.de

Partners: Tias Nimbas Business School, Henley Business School

Programme Rationale

Companies, particulary those with international operations, need to deal with complexity which increases risks and costs, and to be agile in reacting to market changes. Designing a business to achieve these goals needs both business and ICT architectural skills.

The Business and Enterprise Architecture curriculum addresses these challenges and aims to icrease the capability of experienced professionals to engage with key stakeholders in linking strategy, architecture, change and value. The focus is both on developing professional competence and enhancing behavioural skills.

Sample Roles: Enterprise Architect, Business Architect

Core Content   **Core Learning outcomes**   e-CF competencies   e-Leadership Unerstanding   Modules

- Create architectural designs that help innovate business and operating models
- Exploit digital trends to develop target model architectures

  This includes the ability to:
  • judge the impact of current and upcoming digital trends and emerging technologies on the market environment , sector and own organisation or company
  • explain how an architectural design supports the implementation of a new technology platforms
  • illustrate risks and potentials of technology change and relate the reduction of risks to a target architecture mode

- Envision and drive architectural change for business performance
- Influence architectural stakeholders across boundaries
- Build architectural capability and lead inter-disciplinary staff

Legend: ✓ Focus High   ✓ Focus Medium   ✓ Focus Low   ○ Focus None   More information

Triggering response

Local initiative triggered across Europe

Development of the curricula guidelines in 2013 was followed in 2014 with a series of demonstration activities open to education institutions, industry partners and associations promoting e-leadership skill requirements in the workplace.

The European Guidelines and Quality Label were disseminated from the beginning of 2014. Activities centred on regional cluster events across Europe.

Laurent Zibell
Policy Adviser, IndustriALL Europe

Karl-Heinz Hageni
IG Metall

With some 200 affiliated unions and more than 7 million members, IndustriAll Europe is the workers' voice in metalworking, chemistry and clothing industries. It supports all actions boosting growth and high quality jobs in Europe and consequently the European e-leadership initiative which goes into the right direction.

The ideas were exhibited across Europe in a series of events that engaged over 1200 experts, policy-makers and stakeholders from industry and academia from most EU countries.

The multi-region campaign was followed by a high-level conference in Brussels, which attracted some 300 participants from across the EU.

Prof. Leszek Pacholski
Board Member, Informatics Europe, Association of Computer Science Departments

Informatics Europe (IE) is glad to see a dedicated effort on strengthening the ICT profession at the European level and offers to be a channel for promotion and dissemination of initiatives. IE is fully aware of the fact that informatics education should also focus on the business side, and we welcome cooperation on defining the best way of completing the competence body within informatics curricula.

In pan-European dissemination, a local host championed each event, and engaged each region's top education providers and the key industry players. The events generated interest and mobilised activity among all stakeholder groups.

Nadine Burquel
Director of Business School Services, EFMD

EFMD is committed to helping business schools and higher education institutions adopt innovative teaching and learning approaches and welcomes the initiative to promote e-leadership in Europe. Innovation guided by e-leadership is critical to promote smart, sustainable and inclusive growth in Europe and the economic competitiveness of the European Union.

The regional cluster events took place in Sofia (Bulgaria), Henley (United Kingdom), Munich (Germany), Milan (Italy), Madrid (Spain), Antwerp (Belgium), Budapest (Hungary), Aarhus (Denmark), Paris (France), and Wroclaw (Poland). Feedback from participants was positive, with ratings averaging 4.4 on a 5 point scale - 88% of „very positive" ratings.

Eva Fabry
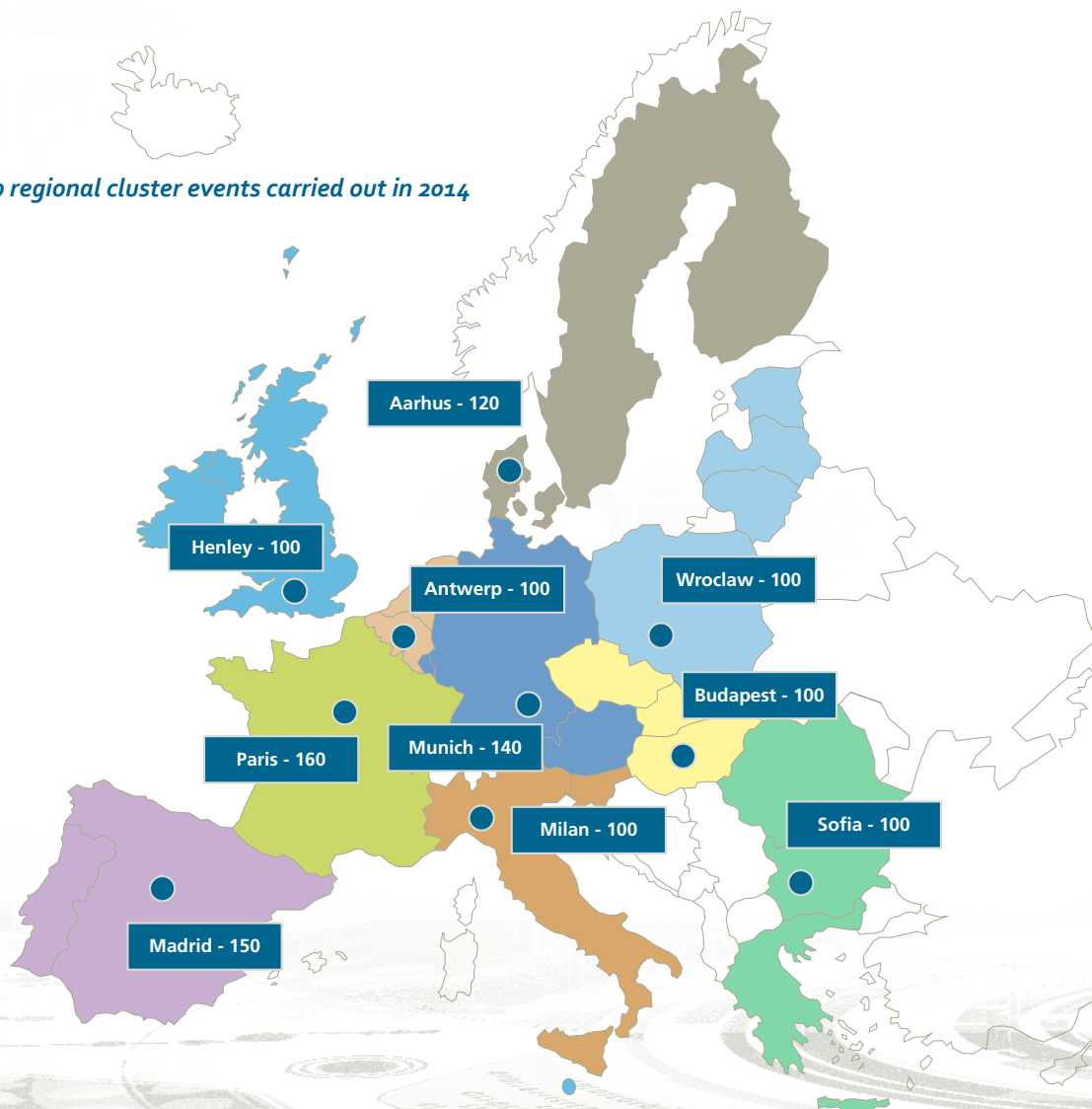ECWT – European Centre for Women and Technology

ECWT is collaborating with EuroCIO and CIONET to develop a strategy and concrete action plan to upgrade the e-leadership skills of female decision makers in larger enterprises.

Experts gave insights into the importance of e-leadership in their region or environment. In Budapest a local expert recognised an existential threat to business if the supply of e-leaders remains low: "If organisations cannot transform their business models, they may not survive. e-Leaders are needed to make this transformation but they are hard to find." (Regional Cluster Event Budapest, Zoltan Buzady). In Milan one expert emphasised the need for dialogue between industry, universities and business schools, but

Danish academics and industry representatives urged a range of different types of e-leaders – horses for courses: „Different types of e-leaders are needed to best develop ICT-based services [...] The variety of application areas does not allow for a one-size-fits-all approach" (Aarhus, Birgitte Hjelm Pavlsen). An enterprise architect with a senior position in European insurance told the event in Munich that e-leaders need to handle the basement IT and strategy in the board-room: "My vision of the e-leader is someone comfortable with regularly taking the elevator from board room to engine room and feeling at ease in both environments".

In Budapest, Prof. Mel Horwitch said "ICT is a key strategy item to leapfrog central and Eastern Europe to a higher value region. These countries can turn challenges to advantages by utilising good local talent via a professional management and (e-) leadership strategy." () "The establishment of a continuous dialogue between industry demanding e-leadership type individuals and universities and business schools expected to supply these to the market is needed", said Lex Hendriks in Milan. And Prof. Eduardo Vendrell said in Madrid: "The Curriculum Profile approach and self assessment allow universities and business schools to develop fully fledged e-leadership courses demanded by industry and in the market".

e-leadership regional cluster events carried out in 2014

Aarhus - 120

Henley - 100

Antwerp - 100

Wroclaw - 100

Budapest - 100

Paris - 160

Munich - 140

Milan - 100

Sofia - 100

Madrid - 150

The team presented the guidelines and their rationale

Speakers from industry gave their point of view.

Leading European associations explained their expectations and engagement with the e-Leadership Initiative

Top academics in the field explained their participation and related activities.

Local and regional politicians used the events to explain their policy on skills for innovation

The initiative moving forward

As the guidelines are taken up and curriculum profiles develop, a complete system of curricula generation and delivery will

- Deliver market transparency: certificates issued on successful completion of a programme contain a clear set of learning outcomes easily understood by any employer looking for candidates with e-leadership skills;
- Encourage autonomous innovation in teaching: any European educational institution can develop its own approach to meeting e-leadership curricula profiles in an employer-verified portfolio, modified and extended on advice from education providers;
- Adapt to changes in life-long learning trajectories, by allowing students that have followed related courses for a recognised Masters degree or MBA to receive full credit for conformant learning outcomes.

Governing the e-Leadership Initiative

Innovations like the European guidelines with the e-leadership curriculum profiles do not occur without disruption. One business school chose to reprint all its brochures
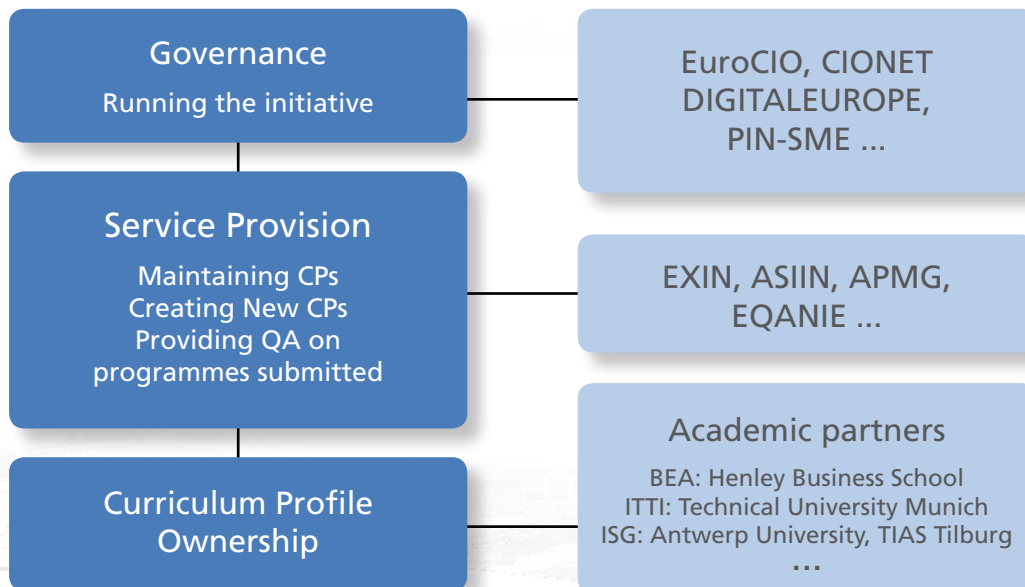
Peter Hagedoorn
Secretary General, EuroCIO

EuroCIO strongly welcomes the participation of DIGITALEUROPE, CIONET and PIN-SME to bring this initiative forward. Curriculum Profiles bring needed transparency to higher and executive education.

to implement the necessary changes. New programmes built to meet e-leadership criteria replace earlier formats and content.

Triggered by the Commission, this new approach to fostering e-leadership skills is now underway. The major European CIO associations EuroCIO (also taking ownership of the e-leadership curriculum profiles) and CIONET,

European e-leadership initiative governance and service provision

Governance – Running the initiative	EuroCIO, CIONET DIGITALEUROPE, PIN-SME ...
Service Provision – Maintaining CPs, Creating New CPs, Providing QA on programmes submitted	EXIN, ASIIN, APMG, EQANIE ...
Curriculum Profile Ownership	Academic partners – BEA: Henley Business School, ITTI: Technical University Munich, ISG: Antwerp University, TIAS Tilburg ...

together with DIGITALEUROPE (the European association representing Europe's ICT industry) and PIN-SME (representing SMEs in the ICT sector) were invited to become members of the governance board of the initiative. So too are EXIN, APMG International, ASIIN and EQANIE, service providers supporting e-leadership curriculum profile

Frits Bussemaker
Partner, CIONET

CIONET has supported the Commission initiative from the start for our members, who are in positions of IT responsibility across European organisations as innovation drivers and e-leaders.

maintenance, the creation of further curricula, and providing quality assurance on programmes submitted. They are supported by a group of academic partners as depicted in the graphic above.

Mark Ruijsendaal
Business Line Manager for EXIN's Assessment portfolio, EXIN

EXIN fully supports the European e-Leadership initiative. We see a role for our organization and our experts in the quality assurance for the register of approved Curriculum Profile mappings and the e-Leadership Quality Labels, and can support the mapping learning outcomes to the e-competence framework e-CF.

Jonathan Murray
Director, DIGITALEUROPE

DIGITALEUROPE is willing to contribute to this simple and industry focused governance ecosystem that will promote effective e-leadership programme development, quality assessment and recognition.

European regions taking action

Economic growth relies on digital innovation and transformation of businesses, and this requires better leadership. e-leadership skills enable people to lead staff towards identifying and designing new business models and making best use of ICT and delivering value to their organisations.

Richard Pharro
CEO, APMG International

In the "Third Wave of IT-Driven Competition", APMG can help the e-leadership initiative by providing rigorous assessment and accreditation processes.

The European Commission launched the activity on e-leadership in 2012 in support of the EU e-skills strategy. The e-Leadership initiative started in 2013 and focused on the leadership needs of decision-makers and professional leaders at larger enterprises in the digital economy and is committed to drive forward this European policy initiative and strengthen cooperation with key stakeholders in **policy-making, industry and academia and further affiliations**. A complementary initiative on ‚e-leadership skills for SMEs' was then launched in 2014. It targets SMEs and start-ups.

Antonio Saravia
Deputy Director of Digital Economy at Red. es, Ministry of Industry, Energy and Tourism

The Digital Agenda in Spain has drawn all the many stakeholders together behind ambitious national targets. We now intend to start building a national coalition on e-leadership, starting with the recent national strategic agreement with Telefonica, España Open Future.

In the meantime concrete proposals have been developed for the European Commission on **pan-European guidelines for e-leadership curricula development**, quality assurance and labelling, with a focus mainly on large enterprises. These include the definition of e-leadership skill sets in curriculum profiles.

This approach enables advanced teaching content and use of the latest research, and fully respects the autonomy and expertise of academics in higher education. It also meets market requirements for qualification transparency, and complements existing offers of educational content. Increasing Europe's digital talent pool, ensuring delivery at appropriate quality, and being fit for purpose in qualifying Europe's e-leaders are seen as the most important issues.
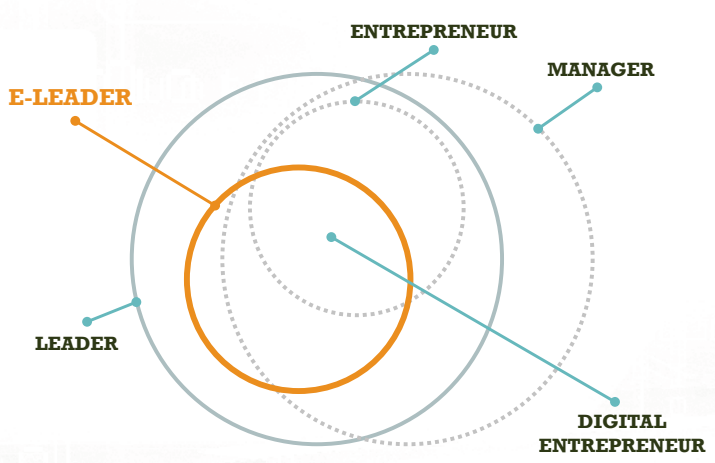
Gergana Passy
Founder Digital National Alliance, Bulgaria,
Digital Champion Bulgaria

The new e-leadership curriculum guidelines of the European e-leadership initiative are helping us pose the right questions about existing higher education programmes and supporting the difficult task of bringing some agility to educational programmes.

Experts throughout Europe agreed that the European e-Leadership Initiative comes at an appropriate moment for EU Member State stakeholders to also invest effort for scaling up efforts and joining forces across the continent, in 2015 and beyond.

Nigel Payne
Projects Director, International,
TechPartnership

The European e-Leadership Initiative comes at an apposite moment for scaling up efforts and joining forces across the continent, in 2015 and beyond.

In several countries stakeholders have already put programmes in place to deliver the e-leadership competence industry requires, or are planning to do so shortly, as is the case for Italy, Germany, Spain, France, United Kingdom, Ireland, Portugal, Latvia, Malta, Lithuania, Croatia, Bulgaria and Romania.

Erik Neumann
EIT ICT Labs, German government, industry and academia initiative 'Software Campus'

German enterprise and the Mittelstand need expert leadership for maintaining their innovation edge.

Senior representatives from governments, industry, NGOs and academia across Europe have expressed their interest in joining forces to push for further action to increase Europe's digital talent pool and the number of e-leadership skilled individuals to build a strong digital single market in Europe. Together they have drawn up this call for action on 'e-Leadership Skills in Europe - Leading stakeholders declare their support' which will guide efforts to unlock the potential of e-leadership skills to fuel growth and job creation and increase Europe's innovativeness and competitiveness.

Join them by endorsing this call for action and promoting e-leadership!

CALL FOR ACTION from Key Stakeholders to Promote e-Leadership in Europe (www.leadership.2015.eu)

ENTREPRENEUR
MANAGER
E-LEADER
LEADER
DIGITAL ENTREPRENEUR

Policy Recommendations

The following recommendations are proposed for ensuring Europe has sufficient e-leadership skills in the near future. The recommendations are to be taken forward by stakeholders in industry and academia, and by government at national level and by the European Union institutions. The recommendations together comprise a comprehensive roadmap for action on e-leadership skills at all levels in the EU.

Matthew Gatt
eSkills Malta Foundation

The eSkills Malta Foundation strongly promotes the European e-leadership curriculum profiles and recommends them to Malta's higher education institutions.
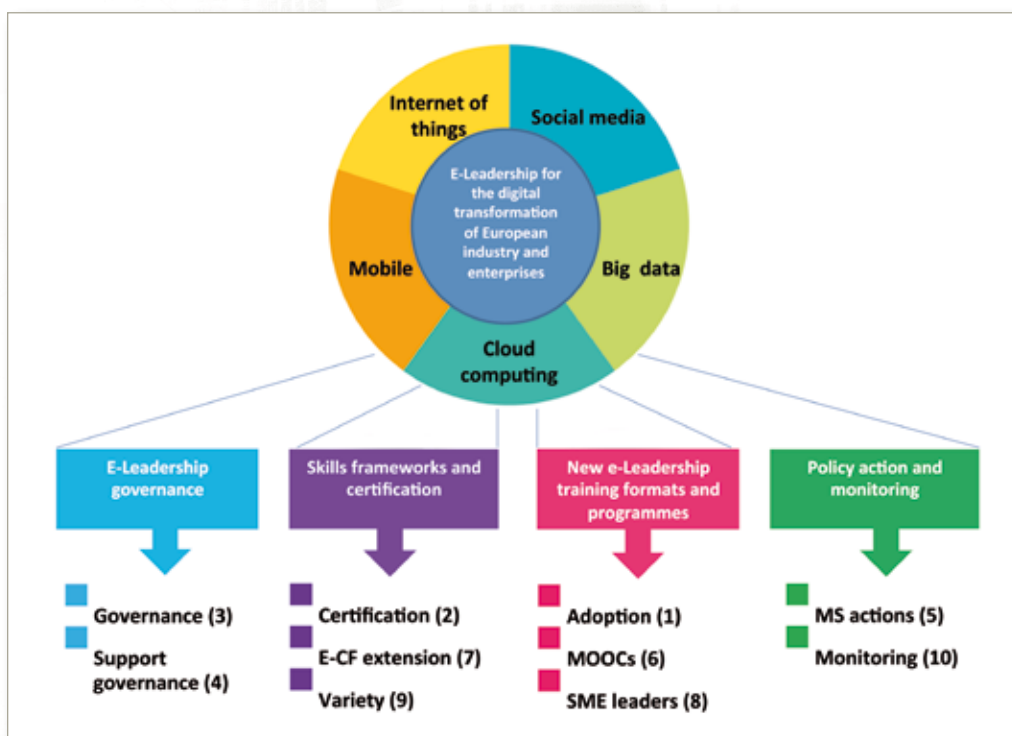
Recommendation 1 – Broad adoption: Promote understanding of e-leadership and widespread adoption of the Guidelines

Demand for ICT workers continues to outstrip supply; latest estimates indicate that this gap will continue to grow by around 3% per year. The mismatch between the current skills available and the needs of the labour market concerns Member States across the EU. The most conservative assumptions yield an estimated 19,000 vacancies in e-leadership. Guidelines and quality labels for e-leadership curricula have been developed to address this gap.

Promote widespread use of the e-leadership curriculum guidelines in Member States

Keep Curriculum Profiles at EU level aligned with developing skills needs by ensuring effective feedback from employers and alumni.

Liaise with associations at EU and national levels to ensure continual optimisation.

Support key stakeholders including the EIT, leading business schools and technical universities, employment organisations and active employers and unions.

Extend links to Bologna processes and encourage adoption in other cross-disciplinary areas.

Recommendation 2 – Certification: Foster appropriate certification structures for e-leadership skill documentation and transparency.

Christian Colmant
Deputy Chief Pas@line Association

The Pasc@line Association has now teamed with CIGREF and other key players in France to spread understanding of the importance of e-leadership skills. All partners agree that the approach must be dynamic: the skills to manage digital transformation are not a destination but a journey, one which help innovative companies avoid falling to Schumpeter's creative destruction.

Employers throughout Europe are looking for people capable of exercising e-leadership in their organisations, kick-starting their innovation portfolios, capitalising on ever-new capabilities of information and communication technologies and delivering value as a competitive position. Standard techniques for investigating and classifying the relevant competences require skilled time. Transparent, comparable certification instruments can help accelerate assessment.

Establish and propagate best practice in the certification of e-leadership skills.
Pay due attention to the validity, quality and transparency of certificates.
Ensure employers are able to trust certificate issuers and can easily and validly compare content.
Define common certification principles across the EU.
Enable learners to build on previous life-long learning certification.
Provide tools and mechanisms to ensure a coherent match to e-leadership Curriculum Profiles.

Recommendation 3 – Governance: Encourage stakeholders to establish governance for e-leadership development, quality assessment and recognition

Initiatives by employers, such as the European association of chief information officers, EuroCIO, have given rise to good governance structures for a programme of educational offers. Some of these structures are relevant to fostering e-leadership skills based on the proposals for European Guidelines and Quality Label. The scaling-up requirements have been identified, and prototype web-based support has been reviewed. Other organisations have expressed interest in a role in governance of e-leadership skill development.

Encourage dialogue with leading European associations and other key stakeholders, which would act as an initial leadership of core group expanding over time.
Elicit stakeholder requirements and willingness for active and efficient governance roles.
Identify and capitalise on best practice in governance structure and processes.
Propose a suitable governance model for e-leadership education and training supply.

Recommendation 4 – Online presence: Support the setting up online services for e-leadership skill development, for learners and for education and training institutions.

Little online support is available to help candidates identify further skills development that they could take advantage of to meet existing demand. There is an excellent website promoting the European e-Competence Framework. No such support is available for e-leadership skills. Offers of information on e-leadership should be properly focussed, outside markets dealing with entirely different skill sets.

Identify with stakeholders the possibility to support the creation of an e-leadership skills development portal at European level.
Enable use / emulation of prototypes developed in response to the current initiative on new curricula for e-leadership of portal content, user dialogue and general functionality.
Include academic contributions and testimonials in online presence.
Support the efforts of stakeholders to establish presence in leading online academic and scientific journals.

Recommendation 5 – EU Member States: Strengthen cooperation and capitalise on Member State initiatives and best practices

Arnis Daugulis
Deputy State Secretary (ICT & E-Government) at Ministry of Environmental Protection and Regional Development of the Republic of Latvia

The e-skills National coalition of Latvia fully supports the EU E-leadership skills initiative: a CIO should set the ground for digital transformation.

Regional Cluster Events have revealed that awareness of e-leadership skill requirements are not equally distributed across Europe. There are great disparities in this respect in Europe. Activity across the globe has been triggered by publications from large consultancies on the need for improved leadership at corporate level to take advantage of innovation opportunities in ICT. Given the current speed of developments, there is a need to continue monitoring of action at nation state or regional level to meet e-leadership skill requirements and demand, addressing emerging shortages, gaps and mismatches.

Encourage action by Member State national governments, stakeholders and associations.
Monitor and benchmark action by Member States against global key performance indicators and consider integration with existing benchmarking/ scoreboards.
Support exchange of Member State policy initiatives and dissemination of best practice
Strengthen current policy initiative to create a more ambitious approach to e-leadership skill development in Europe focusing on innovation.
Bring e-leadership skills into entrepreneurship programmes and innovation incubators. Consider foundations of e-leadership skills at earlier stages of education.
Ensure public funding schemes are open for e-leadership education and training programmes.

Recommendation 6 - MOOCs: Stimulate best practice in blended e-leadership programme delivery

In today's teaching of e-leadership skills, traditional techniques of teaching dominate the most effective programmes. As of mid 2013, there were only some 21 programmes for developing e-leaders in Europe, an offer that must be increased to meet demand. Extended supply should make use of new teaching methods to minimise costs to students and employers.

Identify best practice in mixed mode teaching strategies outside the e-leadership field.
Adapt best practice to develop blended e-leadership programme delivery - include webinars and consider using small MOOCs for marketing.
Encourage the development of e-leadership programmes: maintain networking value to participants, e.g. providing integrated short summer residential phases; focus / minimise teaching staff time; deliver a conformant set of e-leadership learning outcomes, including those which require individual study and enable a maximum of continued active leadership during a programme.

Recommendation 7 – e-CF: Further enrich the European e-Competence Framework

Acceptance of the European e-Competence framework in enterprises and public organisations across Europe has been growing rapidly. The opportunity exists for leveraging content and tools across specialised areas of e-skills such as e-leadership. By linking to the Framework, added value is delivered to personnel decisions and the rationalised approach to human resources planning.

Maintain use of the European e-Competence Framework (e-CF) as standard competence framework for all e-leadership Curriculum Profiles.
Encourage convergence of disparate related national and corporate competence frameworks in the realm of e-leadership and e-skills.
Track the developing understanding of e-leadership skills and consider the mode by which new e-leadership skills requirements are incorporated in the future version of the e-CF.

Recommendation 8 – SME e-Leaders: Extend concept of e-leadership to SME, consulting, entrepreneurial activity and self-employment

The activities reported here concern the fostering of e-leadership skills in large enterprises. Stakeholders have made it clear that demands for e-leadership improvement in smaller organisations must also be a priority. Education for entrepreneurship is already high on the agenda in most EU Member States, which have put in place a variety of programmes and activities. Here, e-leadership skills are of essential importance. The Commission's Entrepreneurship 2020 Action Plan (COM (2012) 795 final) includes a reference to e-leadership skills.

Sebastiano Toffaletti
Secretary General, PIN-SME

Our recommendation to the Commission is to extend the focus of the initiative to foster e-leadership in Europe's thriving small and medium sized businesses.

Continue awareness creation and promotion of e-leadership skills by stakeholders capitalising on the e-Skills for Jobs campaign (2015-2016)
Align the Entrepreneurship 2020 Action Plan with the developments of the initiative on e-leadership
Foster e-leadership skills across a variety of firms and sectors and ensure pre-university students are offered the opportunity for entrepreneurial experience.
Apply the EC/OECD guidance framework to entrepreneurial schools and VET institutions.

Recommendation 10 – Gap monitoring: Establish and disseminate robust estimates of supply and demand

Gerard Walker
Expert Group on Future Skills Needs- Ireland, Department of Jobs, Enterprise and Innovation, Ireland

The Expert Group on Future Skills Needs-Ireland has identified a key need for action to build-up e – leadership professional skills to drive increased innovation and business value from the application of ICT within enterprises.

Recommendation 9 – Skills variety: Continue stakeholder dialogue to stimulate supply-side response to the variety of e-leadership skills requirements across the economy

The study of e-leadership is a relatively recent discipline, and though there is broad understanding among stakeholders what the key features of skill sets are, it is to be expected that the skills vary according to the setting in the economy. In addition, there is a need for more precise and shared definitions and metrics of e-leadership skills and competencies to demonstrate what kinds of e-leaders are associated with specific kinds of business and social value creation. Curricula and e-leadership development efforts must be relevant and monitoring of demand and supply of e-leadership skills must be improved – in line with sectoral requirements.

Current quantitative data and statistics on the identification and anticipation of shortages, gaps and mismatches are inadequate to understanding demand and supply of e-leadership skills. There are few data sets from existing sources of any relevance, and these have a poor match. The lack of data significantly restricts the actions of a broad set of stakeholder groups. New and better data would help to define priorities and measure progress.

Further study the connection between e-leadership skills and innovation performance, and the identification of types of e-leadership and matching of effectiveness to innovation settings – corporate, SME, entrepreneur.
Monitor use of e-leadership skills and further improve metrics for e-leadership skills.
Sustain cooperation with industry, education, training and certification institutions, academia, the CEN Workshop on ICT skills, Eurostat, the national statistical institutes, national employment agencies, staffing industry representatives at national and European levels, C-level business executives and digital entrepreneurs.

Identify new data sources for information on demand and supply of e-leadership skills to establish a comprehensive monitoring and projection system.
Ensure that definitions of e-Leadership are adapted to new business and technological developments and remain appropriate to policy (related to innovation and growth).
Analyse relevant Eurostat data (project trends, ensure homogenous data across EU).
Coordinate activities across Europe and disseminate demand trends to trigger relevant policy responses and appropriate university and business school offers.
Provide European industry with robust and timely information about e-leadership courses initiated at universities and business schools.

Acknowledgements

e-Leadership in Europe

European Commission

empirica
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