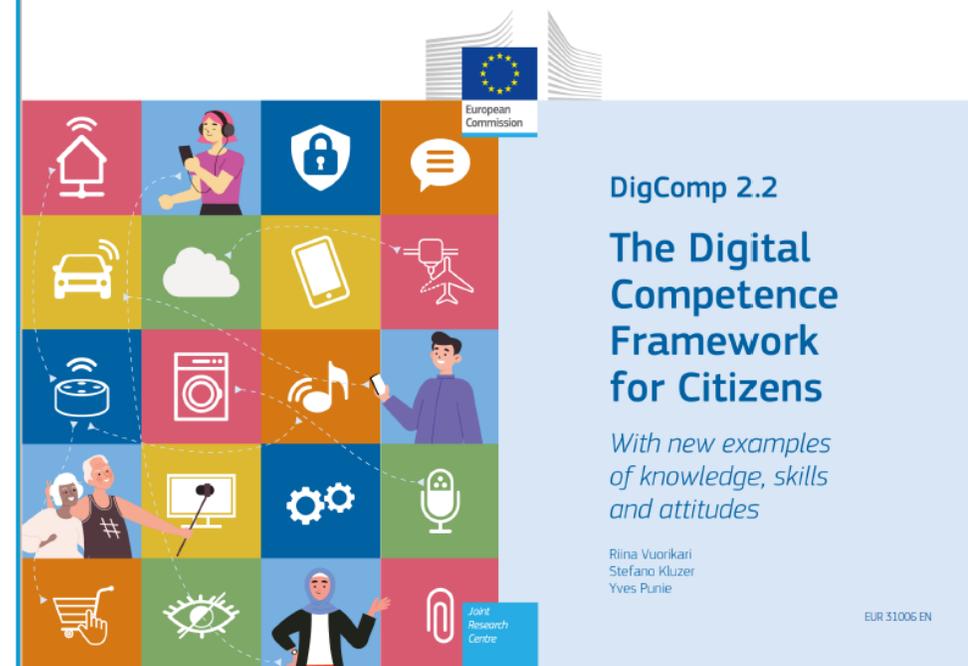


Quadro europeo delle competenze digitali per i cittadini: le novità di DigComp 2.2

31 maggio 2022

FormezPA



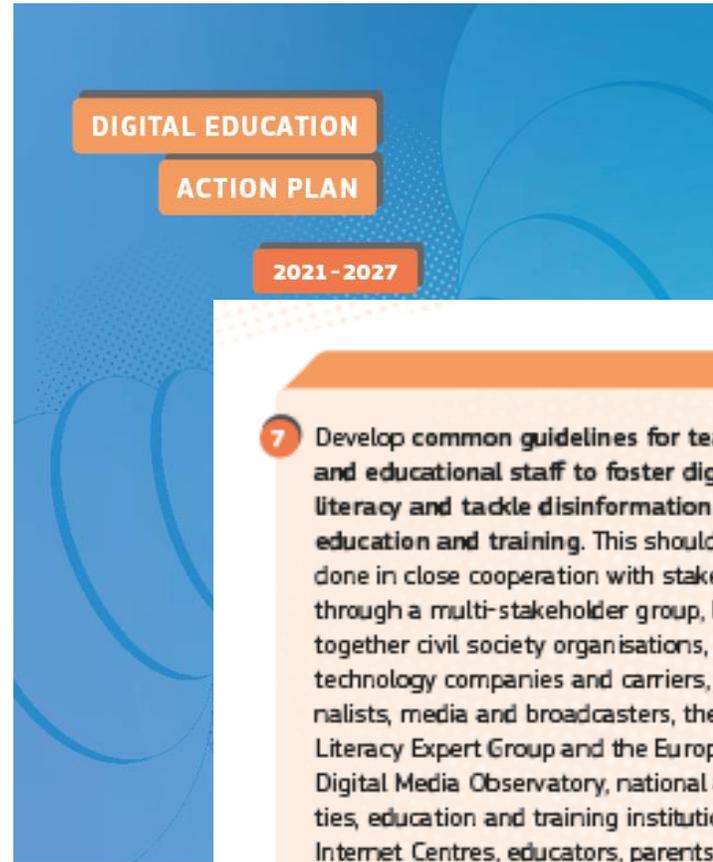
STEFANO KLUZER
Formez

Due domande per iniziare

- 1) Che esperienza hai del framework DigComp?
- 2) In base alle informazioni in tuo possesso, cosa ha riguardato l'aggiornamento DigComp 2.2?

Origine e percorso di aggiornamento DigComp

La sfida della competenza digitale è ai primi posti nell'Agenda Europea



7 Develop common guidelines for teachers and educational staff to foster digital literacy and tackle disinformation through education and training. This should be done in close cooperation with stakeholders through a multi-stakeholder group, bringing together civil society organisations, European technology companies and carriers, journalists, media and broadcasters, the Media Literacy Expert Group and the European Digital Media Observatory, national authorities, education and training institutions, Safer Internet Centres, educators, parents and young people. This will be done in line with the upcoming Media Action Plan.

8 Update the European Digital Competence Framework²² with a view to including AI and data-related skills. Support the development of AI learning resources for schools, VET organisations, and other training providers. Raise awareness on the opportunities and challenges of AI for education and training.

through a focus on inclusive high-quality computing education (informatics) at all levels of education and fostering dialogue with industry on identifying and updating new and emerging skills needs, in synergy with the Skills Agenda.

11 Improve monitoring and support the cross-national collection of data on student digital skills through participation in the ICILS²⁴ to better understand gaps and strengthen the evidence base for actions to address these gaps. This will include introducing an EU target for student digital competence to reduce the share of 13-14 year old students who underperform in computer and information literacy to under 15% by 2030.

12 Incentivise advanced digital skills development through targeted measures including scaling up the Digital Opportunity traineeships by extending them to VET learners and...



Come abbiamo lavorato sul DigComp 2.2

- nella DigComp CoP* ospitata da All Digital
- sotto la guida del JRC Seville
- in 12 gruppi di lavoro tematici
- col contributo di oltre 100 esperti

* <https://all-digital.org/invitation-to-digcomp-cop/>

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EC:

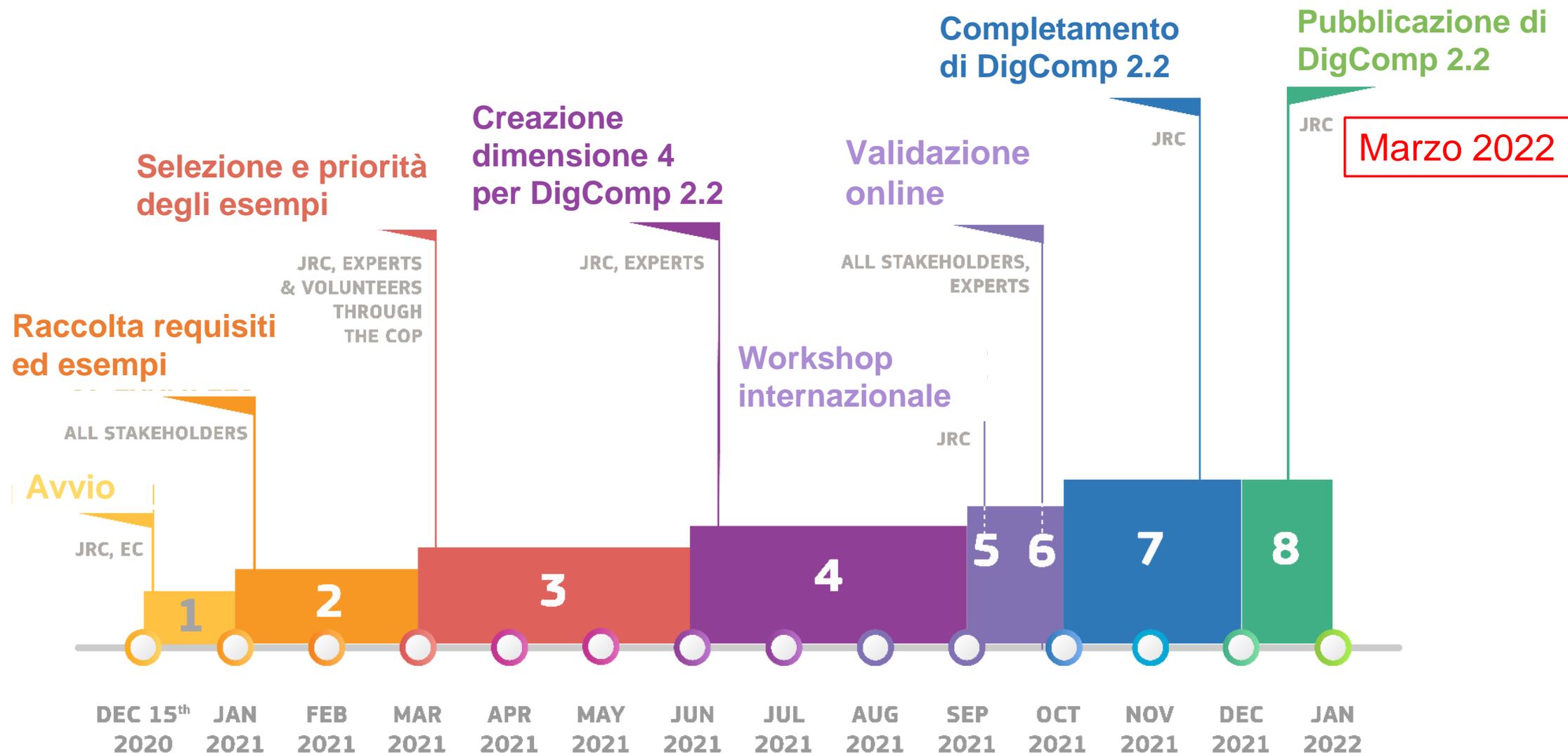
Margherita Bacigalupo (DG JRC), Susana Bernal (DG JRC), Marcelino Cabrera (DG JRC), Clara Centeno (DG JRC), Vasiliki Charisi (DG JRC), Maurizio Curtarelli (EU-OSHA), Veronique Delforge (EUIPO), Hugo De Groof (DG ENV), Anusca Ferrari (DG EAC), Maria Gkoutourna (DG EAC), Emilia Gomez Gutierrez (JRC), Michael Horgan (DG EMPL), Ilias Iakovidis (DG ENV), Natalie Jerzac (DG CNCT), Kari Kivinen (EUIPO), Gabrielle Lafitte (JRC), Robin Massart (DG CNCT), Fulvia Menin (DG CNCT), Arianna Sala (DG JRC), Igancio Sanchez (DG JRC), Bronagh Walton (DG CNCT), Juuso (DG CNCT).

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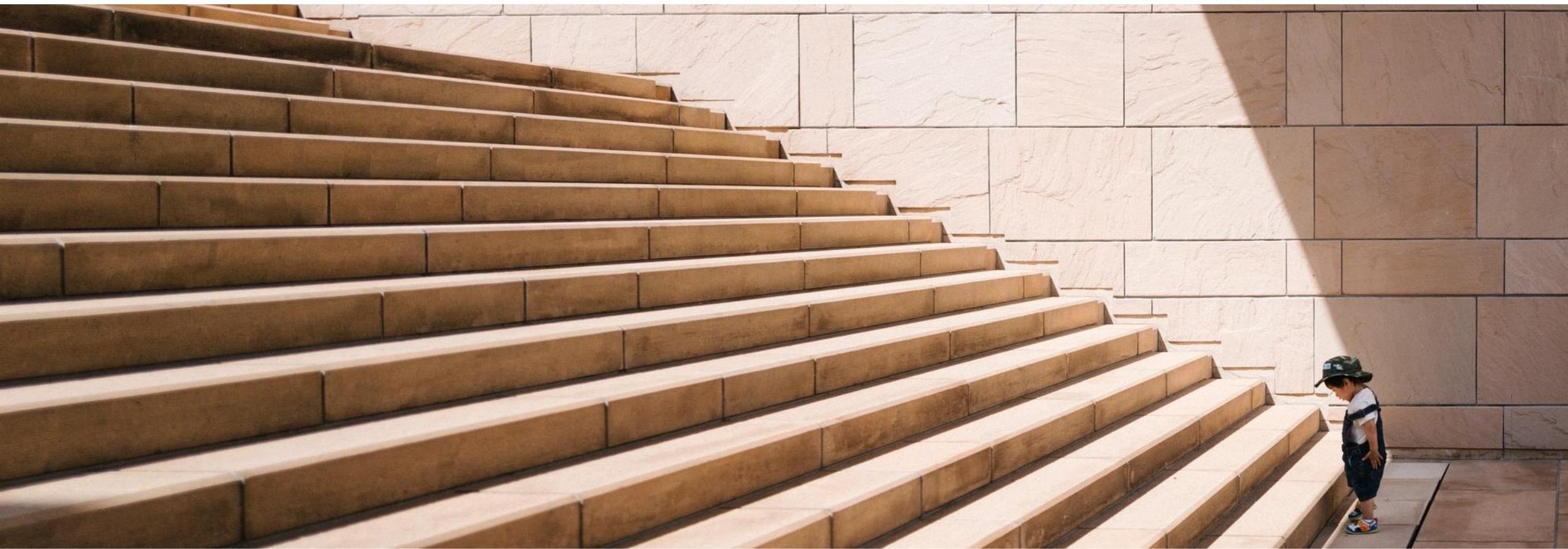
Special thanks to the staff of All Digital, especially Peter Palvolgyi, Victoria Sanz and Andrea Bedorin, for hosting the CoP and managing many of the events!

Tappe e tempi del lavoro sul DigComp 2.2



Le novità del DigComp 2.2

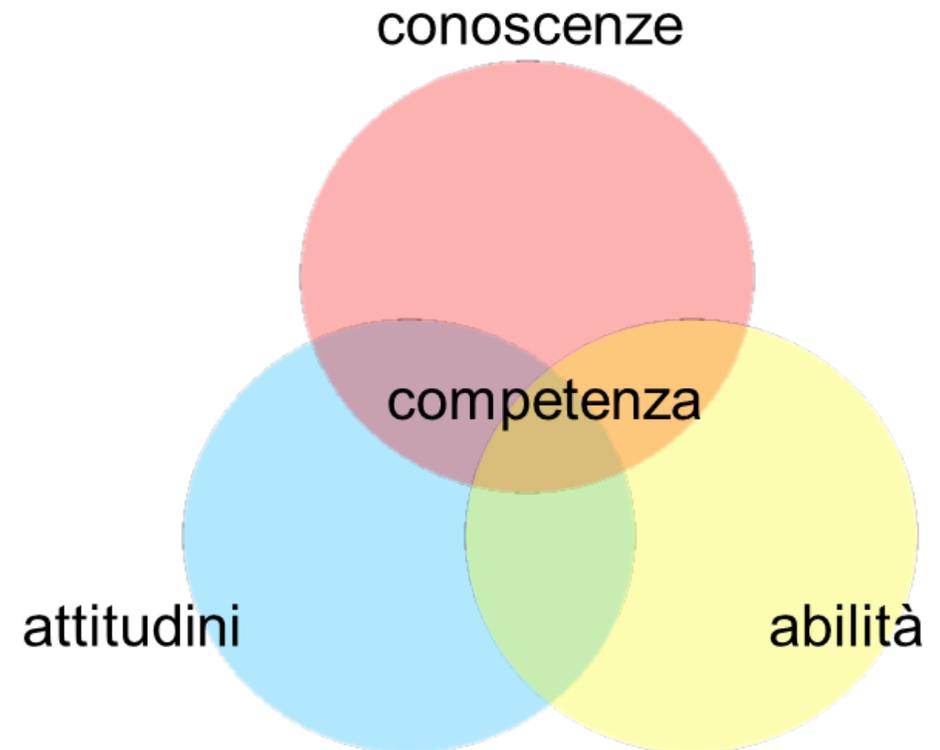
Cosa significa essere ***digitalmente competenti*** oggi?



La competenza digitale implica l'interesse per le tecnologie digitali e il loro utilizzo con dimestichezza, spirito critico e responsabilità per apprendere, lavorare e partecipare alla società.

(Raccomandazione del Consiglio sulle Competenze Chiave per l'Apprendimento Continuo, 22 maggio 2018)

competenza digitale ≠ uso efficiente degli strumenti digitali



Le 5 dimensioni del framework DigComp

Dimensione 1 - Nome dell' **area di competenza** (5 Aree)

Dimensione 2 - Titolo e descrittori della **competenza specifica** (21 competenze)

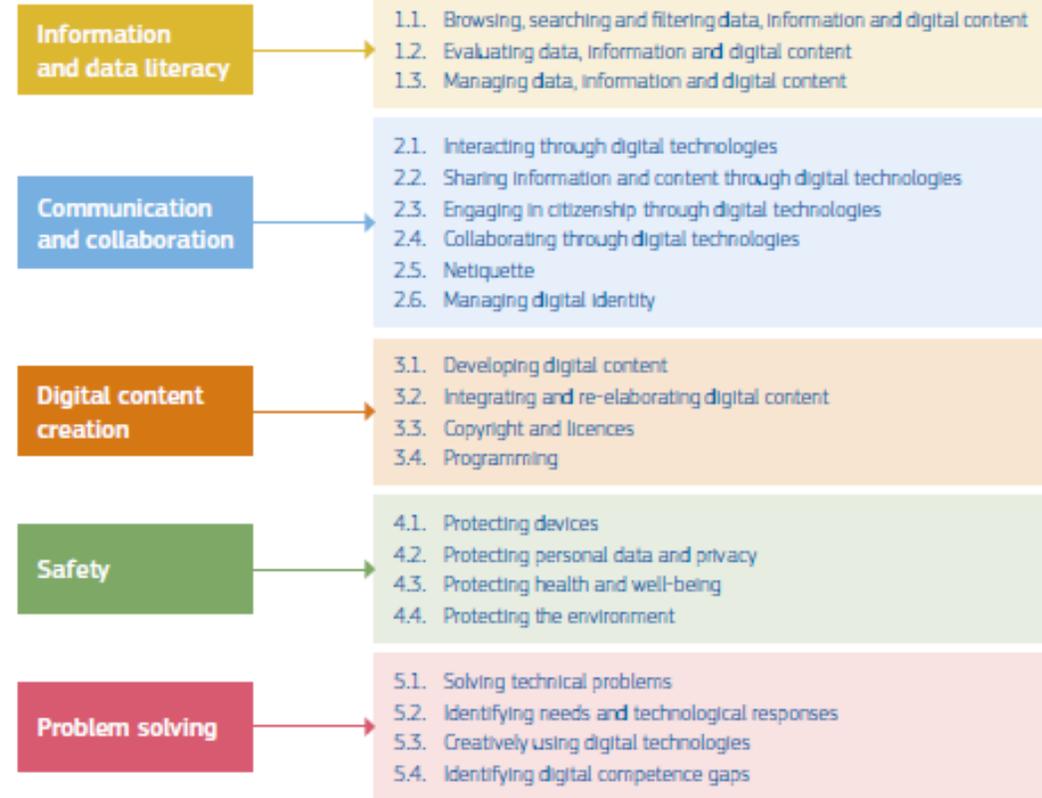
Dimensione 3 - Livelli di **padronanza** (3 macro - 8 livelli)

Dimensione 4 - **Esempi** di conoscenza, abilità e attitudini

Dimensione 5 - Scenari di **applicazione** (apprendimento, lavoro)

Il DigComp 2.2 in sintesi

- titoli e descrittori delle **dimensioni 1, 2, 3 e 5 invariati** -> **integrati nel report** / capitolo 2
- **oltre 250 nuovi esempi di conoscenze, abilità e attitudini (KSA)** – dimensione 4 del Quadro
- raccolta di **risorse** legate all'applicazione di DigComp / capitolo 3
- i diversi **framework** sulle competenze chiave e loro **interconnessioni** / capitolo 1 e 4
- le competenze per l'**intelligenza artificiale** / allegato A2



Temi nuovi del digitale negli esempi KSA di DigComp 2.2

- dis/mis-informazione e il fact-checking di contenuti e fonti online
- lavoro remoto/ibrido
- “dataficazione” di servizi e App (e sfruttamento dei dati personali)
- accessibilità digitale ... come responsabilità di tutti
- sostenibilità ambientale e sociale
- benessere e sicurezza negli ambienti digitali
- l’interazione dei cittadini con l’IA

3 temi/competenze oggetto di approfondimenti

- interazione dei cittadini con sistemi di **intelligenza artificiale**
35 esempi -> 73 in Allegato 2
- **lavoro remoto/ibrido**
4 esempi -> 12 esempi in Allegato 3
- **programmazione** informatica
15 esempi -> articolo Brodnik et al. (2021) “Programming for All: Understanding the Nature of Programs”

Il Quadro integrato nel capitolo 2

Un acronimo indica gli esempi relativi a intelligenza artificiale (AI), lavoro in remoto (RW) e accessibilità digitale (DA)

Il pallino rosso evidenzia la nuova dimensione 4

Per la dim. 5, una linea tratteggiata lega l'esempio di caso d'uso (educazione e lavoro) con il livello di padronanza a cui è riferito.

Ogni area (dim. 1) ha un suo colore che ricorre in tutte le sue competenze specifiche (dim. 2)

DIMENSION 3 - PROFICIENCY LEVEL		DIMENSION 4 - EXAMPLES OF KNOWLEDGE, SKILLS AND ATTITUDES		DIMENSION 5 - USE CASES	
FOUNDATION	1	At basic level and with guidance, I can:	<ul style="list-style-type: none"> identify my information needs, find data, information and content through a simple search in digital environments, find how to access these data, information and content and navigate between them, identify simple personal search strategies. 	KNOWLEDGE	<ol style="list-style-type: none"> Knows that some online content in search result may not be open access or freely available and may require a fee or signing up for a service in order to access it. Aware that online content that is available to users at no monetary cost is often paid for by advertising or by selling the user's data. Aware that search results, social media activity streams and content recommendations on the internet are influenced by a range of factors. These factors include the search terms used, the context (e.g. geographical location), the device (e.g. laptop or mobile phone), local regulations (which sometimes dictate what can or cannot be shown), the behaviour of other users (e.g. trending searches or recommendations) and the user's past online behaviour across the internet. Aware that search engines, social media and content platforms often use AI algorithms to generate responses that are adapted to the individual user (e.g. users continue to see similar results or content). This is often referred to as 'personalisation'. (AI) Aware that AI algorithms work in ways that are usually not visible or easily understood by users. This is often referred to as "black box" decision-making as it may be impossible to trace back how and why an algorithm makes specific suggestions or predictions. (AI)
	2	At basic level and with autonomy and appropriate guidance where needed, I can:	<ul style="list-style-type: none"> identify my information needs, find data, information and content through a simple search in digital environments, find how to access these data, information and content and navigate between them, identify simple personal search strategies. 		
INTERMEDIATE	3	On my own and solving straightforward problems, I can:	<ul style="list-style-type: none"> explain my information needs, perform well-defined and routine searches to find data, information and content in digital environments, explain how to access them and navigate between them, explain well-defined and routine personal search strategies. 	ATTITUDES	<ol style="list-style-type: none"> Intentionally avoids distractions and aims to avoid information overload when accessing and navigating information, data and content. Values tools designed to protect search privacy and other rights of users (e.g. browsers such as DuckDuckGo). Weights the benefits and disadvantages of using AI-driven search engines (e.g. while they might help users find the desired information, they may compromise privacy and personal data, or subject the user to commercial interests). (AI) 15. Concerned that much online information and content may not be accessible to people with a disability, for example to users who rely on screen reader technologies to read aloud the content of a web page. (DA)
	4	Independently, according to my own needs, and solving well-defined and non-routine problems, I can:	<ul style="list-style-type: none"> illustrate information needs, organise the searches of data, information and content in digital environments, describe how to access these data, information and content, and navigate between them, organise personal search strategies. 		
ADVANCED	5	As well as guiding others, I can:	<ul style="list-style-type: none"> respond to information needs, apply searches to obtain data, information and content in digital environments, show how to access these data, information and content and navigate between them, propose personal search strategies. 	<p>KNOWLEDGE</p> <p>SKILLS</p> <p>ATTITUDES</p>	<p>FOUNDATION</p> <p>EMPLOYMENT SCENARIO: job seeking process</p> <p>With help from an employment adviser</p> <ul style="list-style-type: none"> I can identify, from a list, those job portals which can help me look for a job. I can also find these job portals in my smartphone's app store, and access and navigate between them. From a list of generic keywords for job seeking available in a blog on job hunting, I can also identify the keywords that are useful for me. <p>LEARNING SCENARIO: prepare group work with my classmates</p> <p>With help from my teacher</p> <ul style="list-style-type: none"> I can identify websites, blogs and digital databases from a list in my digital textbook to look for literature on the report topic. I can also identify literature on the report topic in these websites, blogs and digital databases, and access and navigate among them. Using a list of generic keywords and tags available in my digital textbook, I can also identify those which would be useful for finding literature on the report topic.
	6	At advanced level, according to my own needs and those of others, and in complex contexts, I can:	<ul style="list-style-type: none"> assess information needs, adapt my searching strategy to find the most appropriate data, information and content in digital environments, explain how to access these most appropriate data, information and content and navigate among them, vary personal search strategies. 		
HIGHLY SPECIALISED	7	At highly specialised level, I can:	<ul style="list-style-type: none"> create solutions to complex problems with limited definition that are related to browsing, searching and filtering of data, information and digital content, integrate my knowledge to contribute to professional practice and knowledge and guide others in browsing, searching and filtering data, information and digital content. 	<p>KNOWLEDGE</p> <p>SKILLS</p> <p>ATTITUDES</p>	<p>FOUNDATION</p> <p>EMPLOYMENT SCENARIO: job seeking process</p> <p>With help from an employment adviser</p> <ul style="list-style-type: none"> I can identify, from a list, those job portals which can help me look for a job. I can also find these job portals in my smartphone's app store, and access and navigate between them. From a list of generic keywords for job seeking available in a blog on job hunting, I can also identify the keywords that are useful for me. <p>LEARNING SCENARIO: prepare group work with my classmates</p> <p>With help from my teacher</p> <ul style="list-style-type: none"> I can identify websites, blogs and digital databases from a list in my digital textbook to look for literature on the report topic. I can also identify literature on the report topic in these websites, blogs and digital databases, and access and navigate among them. Using a list of generic keywords and tags available in my digital textbook, I can also identify those which would be useful for finding literature on the report topic.
	8	At the most advanced and specialised level, I can:	<ul style="list-style-type: none"> create solutions to solve complex problems with many interacting factors that are related to browsing, searching and filtering data, information and digital content, propose new ideas and processes to the field. 		

Le gradazioni di colore rappresentano i livelli di padronanza (dim. 3)

Le icone raggruppano i tipi di esempi:
libro = conoscenze
bicicletta = abilità
cuore = attitudini

Come riconoscere gli esempi

Conoscenze



- sa che ...
- è a conoscenza di/ conosce il/la ...,
- capisce che ...

Abilità (cognitive e pratiche)



- sa come ...
- è in grado/capace di ...

Attitudini (valori, aspirazioni, priorità)



- è aperto/curioso ...
- si preoccupa per/di ...

KNOWLEDGE

It means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study.



→ In DigComp 2.2, **knowledge examples** follow the wording of: *Aware of...*, *Knows about...*, *Understands that...*, etc.

SKILLS

They are the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the European Qualifications Framework, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments).



→ In DigComp 2.2, **skills examples** follow the wording of: *Knows how to do...*, *Able to do...*, *Searches...*, etc.

ATTITUDES

They are conceived as the motivators of performance, the basis for continued competent performance. They include values, aspirations and priorities.



→ In DigComp 2.2, **attitude examples** follow the wording of: *Open to...*, *Curious about...*, *Weighs the benefits and risks ...*, etc.

Cosa sono e non sono gli esempi

- 10-15 esempi per ciascuna delle 21 competenze DigComp sono pensati come **ausilio/fonte di ispirazione** per identificare priorità tematiche, creare/aggiornare proposte formative e strumenti di valutazione
- **Non** sono una **lista esaustiva** dei contenuti di una specifica competenza
- **Non** definiscono dei **livelli di padronanza** anche se alcuni sono più complessi di altri
- **Non** sono una **check-list** per valutare la competenza o per l'auto-riflessione

Temi:

dis/misinformazione – Sandra Troia

intelligenza artificiale e dati – Guido Scorza

Cittadini e intelligenza artificiale

Il cittadino e l'intelligenza artificiale

- Focus DigComp 2.2 è sull'interazione dei cittadini con l'IA non sull'IA in sè
- I 73 esempi in Allegato 2 sono raggruppati:
 - A. Cosa fanno e cosa non fanno i sistemi di IA?
 - B. Come funzionano i sistemi di IA?
 - C. Quando si interagisce con i sistemi di IA
 - D. Le sfide e l'etica dell'IA
 - E. Atteggiamenti relativi all'agenzia e controllo umano
- Aspetti da aggiungere ad es. in un corso sull'IA: cos'è l'IA, storia dell'IA, differenti tipologie e tecniche di IA ecc.

REQUISITI EMERSI DURANTE LA REVISIONE

CONOSCENZE



- Sapere cosa possono e NON possono fare i sistemi di IA
- Capire i benefici, limiti e le sfide poste dai sistemi di IA

ABILITA'



- Usare, interagire con e dare feedback ai sistemi di IA da utente
- Configurare, supervisionare e adattare i sistemi di IA (es. sovrascrivere, modificare)

ATTITUDINI



- Agenzia e controllo umani
- Atteggiamento critico ma aperto
- Considerazioni etiche rispetto all'uso

Esempi su tecnologie indossabili (wearable), datafication e salute personale

«Datafication» è la trasformazione progressiva di aspetti della nostra esistenza in dati che vengono archiviati in database e poi elaborati, sempre più spesso con tecniche di IA, per generare informazioni utili a fini commerciali, di sicurezza e ... per salute e benessere.



“The quantified self”
Copyright © The Economist, May 7-13 2022

4.3 Proteggere la salute e il benessere /1

- Dai descrittori dimensioni 2 e 3 del DigComp 2.1 visione “protettiva” -> difendersi dai danni alla salute psico-fisica dall’uso del digitale.
- Nel DigComp 2.2, esempi 191 e 192 introducono il tema “**digital health applications**”

DIMENSION 4 • EXAMPLES OF KNOWLEDGE, SKILLS AND ATTITUDES	
DCE	189. Aware of the importance of balancing the use of digital technologies with non-use as an option, as many different factors in digital life can impact on personal health, wellbeing and life satisfaction.
	191. Sa che molte applicazioni per la salute digitale non sono soggette a procedure ufficiali di autorizzazione, diversamente da quanto accade con la medicina tradizionale.
	191. Aware that for many digital health applications, there are no official licensing procedures as is the case in mainstream medicine.
	192. Aware that some applications on digital devices (e.g. smartphones) can support the adoption of healthy behaviours by monitoring and alerting the user about health conditions (e.g. physical, emotional,
	192. Sa che esistono applicazioni digitali (ad es. su smartphome) che possono promuovere comportamenti salutari monitorando e allertando l’utente sulle sue condizioni fisiche, emotive e psicologiche. Tuttavia, alcune azioni o immagini proposte da queste applicazioni potrebbero avere anche un effetto negativo sulla salute fisica o mentale (ad es. guardare immagini «ideali» del corpo umano può generare ansia).

4.3 Proteggere la salute e il benessere /2

Tecnologia e mercato in rapida crescita:

- (390) orologi e anelli smart, fitness tracker, cinturini, cerotti e altri "wearable" potenziati elettronicamente, che grazie a (1200) sensori possono registrare oltre 7.500 variabili fisiologiche e comportamentali
- 200M unità nel 2020 -> 400M previste nel 2026 => US\$ 29bn nel 2021 (c.a 50% mercato prodotti sportivi) 25% degli abitanti in US ha un dispositivo

Le **applicazioni** spaziano da:

- diagnosi precoce di vari problemi (es. fibrillazione atriale causa del 25% dei 100mila ictus annui in UK)
- personalizzazione di suggerimenti alimentari, farmacologici, comportamentali (es. movimento) -> prevenzione e trattamento malattie croniche (es. diabete)
- sperimentazione di nuovi farmaci ed osservazioni epidemiologiche

Problemi aperti:

- qualità estremamente variabile dei dispositivi e affidabilità dei risultati -> certificazioni
- moltissime App (400mila negli store Google e Apple) diverse per privacy, UX, evidenza che funzionino. Dal 2017 solo 40 App approvate da FDA!
- uso improprio dei dati raccolti (es. da assicurazioni o aziende nel reclutamento)

Accessibilità digitale nel/del DigComp 2.2

Accessibilità digitale: una priorità e un obiettivo a cui tutti possiamo contribuire

Allegato 4 solo versione online:
Quadro DigComp
(capitolo 2)
accessibile agli
screen reader

11 esempi KSA
sulla accessibilità
digitale:

15 (1.1)
45 (2.1)
91 (2.4)
96 (2.5)
120, 122, 129 (3.1)
132 (3.2)
230, 231, 234 (5.2)

85

A4. ACCESSIBLE VERSION OF THE FRAMEWORK

DIMENSION 1: COMPETENCE AREA

1. INFORMATION AND DATA LITERACY

DIMENSION 2: COMPETENCE

1.1: BROWSING, SEARCHING AND FILTERING DATA, INFORMATION AND DIGITAL CONTENT

To articulate information needs, to search for data, information and content in digital environments, to access them and to navigate between them. To create and update personal search strategies.

DIMENSION 3: PROFICIENCY LEVEL

Foundation level 1

At basic level and with guidance, I can:

- **identify** my information needs, find data, information and content through a **simple** search in digital environments,
- **find** how to access these data, information and content and navigate between them,
- **identify simple** personal search strategies.

Foundation level 2

At basic level and with autonomy and appropriate guidance where needed, I can:

- **identify** my information needs,
- **find** data, information and content through a **simple** search in digital environments,
- **find** how to access these data, information and content and navigate between them.
- **identify simple** personal search strategies.

Intermediate level 3

On my own and solving straightforward problems, I can:

- **explain** my information needs,
- **perform well-defined and routine** searches to find data, information and content in digital environments,
- **explain** how to access them and navigate between them,
- **explain well-defined and routine** personal search strategies.

Intermediate level 4

Independently, according to my own needs, and solving well-defined and non-routine problems, I can:

- **illustrate** information needs,
- **organise** the searches of data, information and content in digital environments,
- **describe** how to access these data, information and content, and navigate between them,
- **organise** personal search strategies.

Advanced level 5

As well as guiding others, I can:

- **respond** to information needs,
- **apply** searches to obtain data, information and content in digital environments,
- **show** how to access these data, information and content and navigate between them.
- **propose** personal search strategies.

Advanced level 6

At advanced level, according to my own needs and those of others, and in complex contexts, I can:

- **assess** information needs,
- **adapt** my searching strategy to find the **most appropriate** data, information and content in digital environments,
- **explain** how to access these **most appropriate** data, information and content and navigate among them,
- **vary** personal search strategies.

Highly Specialised level 7

At highly specialised level, I can:

- **create solutions to complex problems with limited definition** that are related to browsing, searching and filtering of data, information and digital content,
- **integrate** my knowledge to **contribute to professional practice and knowledge and guide others** in browsing, searching and filtering data, information and digital content.

Highly Specialised level 8

At the most advanced and specialised level, I can:

- **create solutions to solve complex problems with many interacting factors** that are related to browsing, searching and filtering data, information and digital content.
- **propose new ideas and processes** to the field.

Sull'uso del framework

I framework sulle competenze chiave /1

Come le costellazioni che vediamo (diversamente) nelle stelle dell'universo*



Visione astronomica Occidentale



Visione astronomica Araba

* Margherita Bacigalupo (2022), "Competence frameworks as orienteering tools", <https://revistas.um.es/riite>

I framework sulle competenze chiave /2

Sono rappresentazioni (consensuali) dell'universo quasi infinito delle conoscenze, abilità e attitudini che servono in ambiti chiave della nostra esistenza che, come le costellazioni, aiutano a capire dove siamo e ad orientare la navigazione verso una meta:

- adottare un linguaggio comune che colleghi mondo dell'istruzione e del lavoro
- insegnare e apprendere le competenze
- riconoscere l'apprendimento pregresso
- valutare i livelli di competenza
- dimostrare i progressi
- certificare i livelli di competenza

Margherita Bacigalupo (2022),
"Competence frameworks as orienteering
tools", <https://revistas.um.es/riite>

I framework sulle competenze chiave /3

Non sono standard, vincolanti e da applicare alla lettera, ma **quadri di riferimento-orientamento** volutamente generici o esemplificativi, da interpretare e adattare in funzione di obiettivi, target-utenti, contesti.

“Il carattere ampio e apparentemente esaustivo della proposta (DigComp) ... riflette la complessità della competenza digitale che oggi riguarda molti aspetti della vita quotidiana. E se questo è sicuramente un suo valore aggiunto, è anche vero che **non tutti i cittadini, studenti o utilizzatori saranno interessati a sviluppare tutte le competenze qui elencate**. E' quindi compito di utenti, istituzioni, intermediari e chiunque avvii iniziative in questo campo di **usare il DigComp adattandolo ai loro bisogni ...**” (DC 1.0, p.9)

“I nuovi esempi KSA **non** devono essere visti come un **insieme di obiettivi di apprendimento** che tutti i cittadini devono raggiungere” (DC 2.2, p.5)

Risorse utili per applicare il DigComp



DigComp into Action*



DigComp at Work** (and Guidelines)

DigCompSAT***

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 **mydigiskills** <https://mydigiskills.eu/>

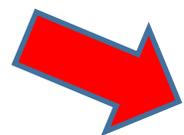
* https://publications.jrc.ec.europa.eu/repository/bitstream/JRC110624/dc_guide_may18.pdf

** https://publications.jrc.ec.europa.eu/repository/bitstream/JRC120376/digcomp_at_work_090720_1.pdf

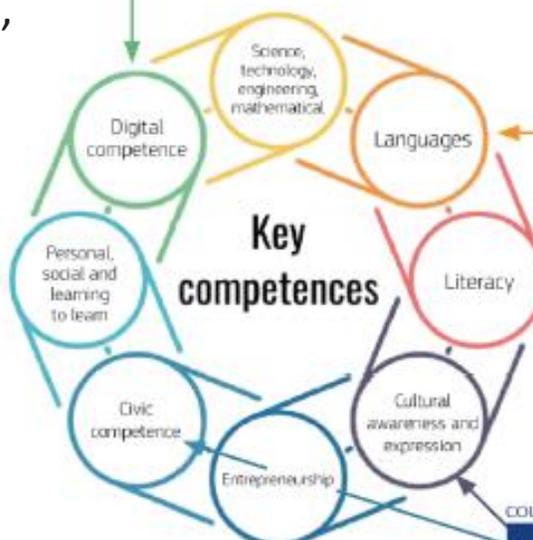
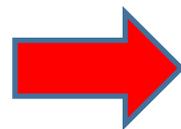
*** https://publications.jrc.ec.europa.eu/repository/bitstream/JRC123226/digcompsat_2020.pdf

DigComp e le altre competenze chiave (cap 4.2)

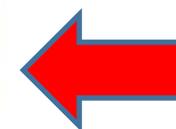
Esempi KSA sull'interconnessione **DigComp-LifeComp** includono: 4, 53, 55, 83, 89, 91, 95, 97, 100, 102, 103, 188, 196, 199, 248, 251, 256, 258.



Esempi KSA sull'interconnessione **DigComp-EntreComp** includono: 237, 239, 242, 243, 244 (tutti in 5.3)



Esempi KSA sull'interconnessione **DigComp-Cittadinanza / Consapevolezza ed espressione culturale** includono: 72, 73, 77, 80, 81 (tutti in 2.3)



GRAZIE PER L'ATTENZIONE !

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DigComp 2.2: <https://publications.jrc.ec.europa.eu/repository/handle/JRC128415>