

Jornada “Oportunidades de financiación europea en matemáticas”

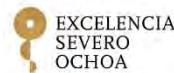


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BCAM – Basque Center for Applied Mathematics

30 de Septiembre 2019



MINISTERIO
DE CIENCIA, INNOVACION
Y UNIVERSIDADES



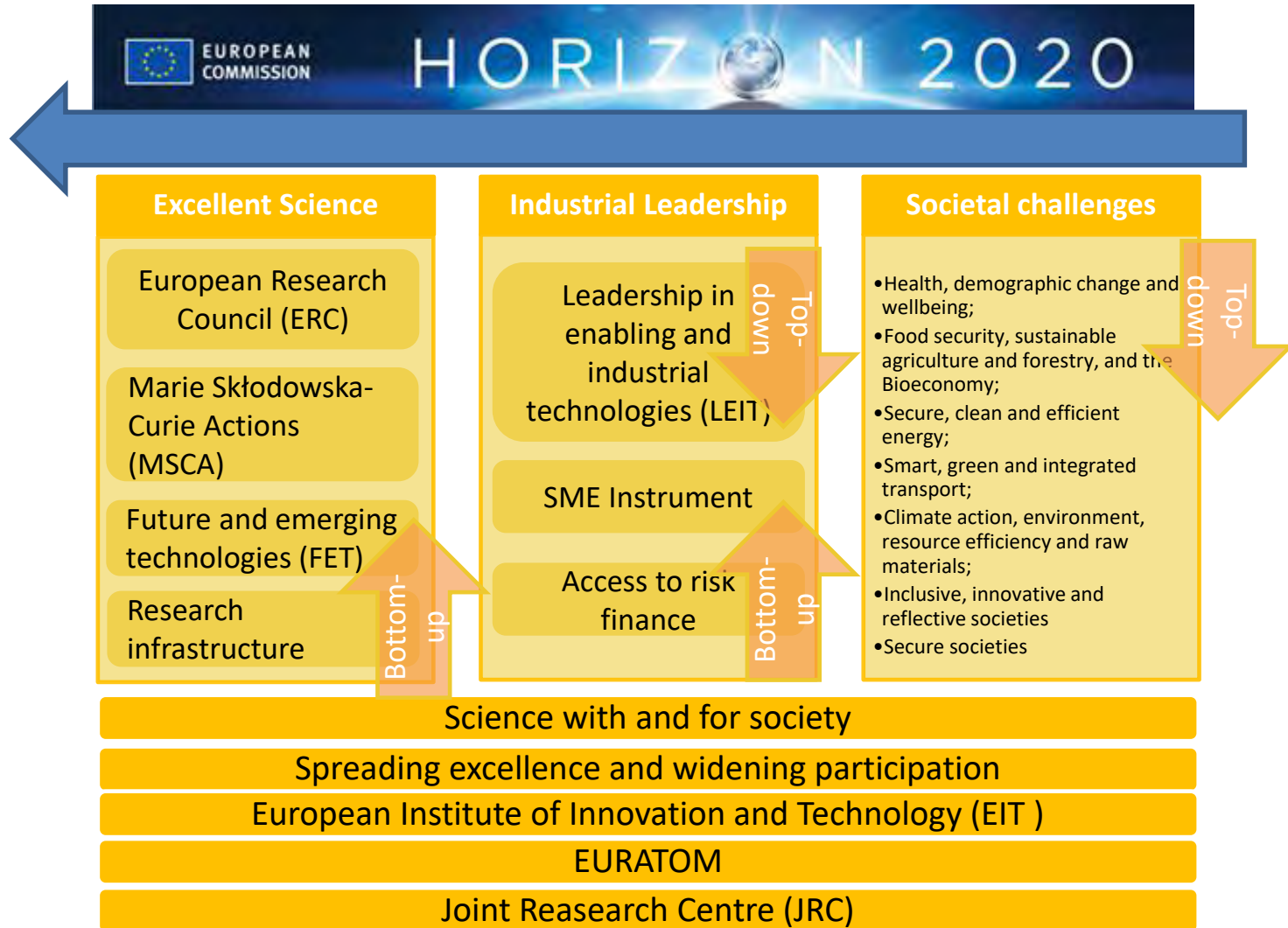
Ponencia 1

1. Intro. Las matemáticas del H2020
2. Horizon 2020 para matemáticas y los matemáticos? Motivación e instrumentos.
 1. Acciones top-down; Liderazgo Industrial y Retos Sociales ... uff, ¡qué lejos! (terreno cedido, terreno perdido)
 2. Acciones bottom-Up: Pilar Excelente ¿todo lo que se financia son teoremas?
 3. ¿hay fórmula de éxito? Algunas recomendaciones (think twice)

1. Participación de las matemáticas en H2020: core, essential and collaboration.
 1. Pilar Excelente → Core (no solo) y “Essential” (casi todo)
 2. Liderazgo Industrial → Big Data + HPC. La colaboración como clave del éxito.
 3. Retos de la sociedad → herramienta transversal a todos los retos, Mathematics everywhere. La colaboración como clave del éxito.

1. Horizon 2020 para matemáticas y los matemáticos?

Motivación e instrumentos.



1. Las matemáticas del H2020

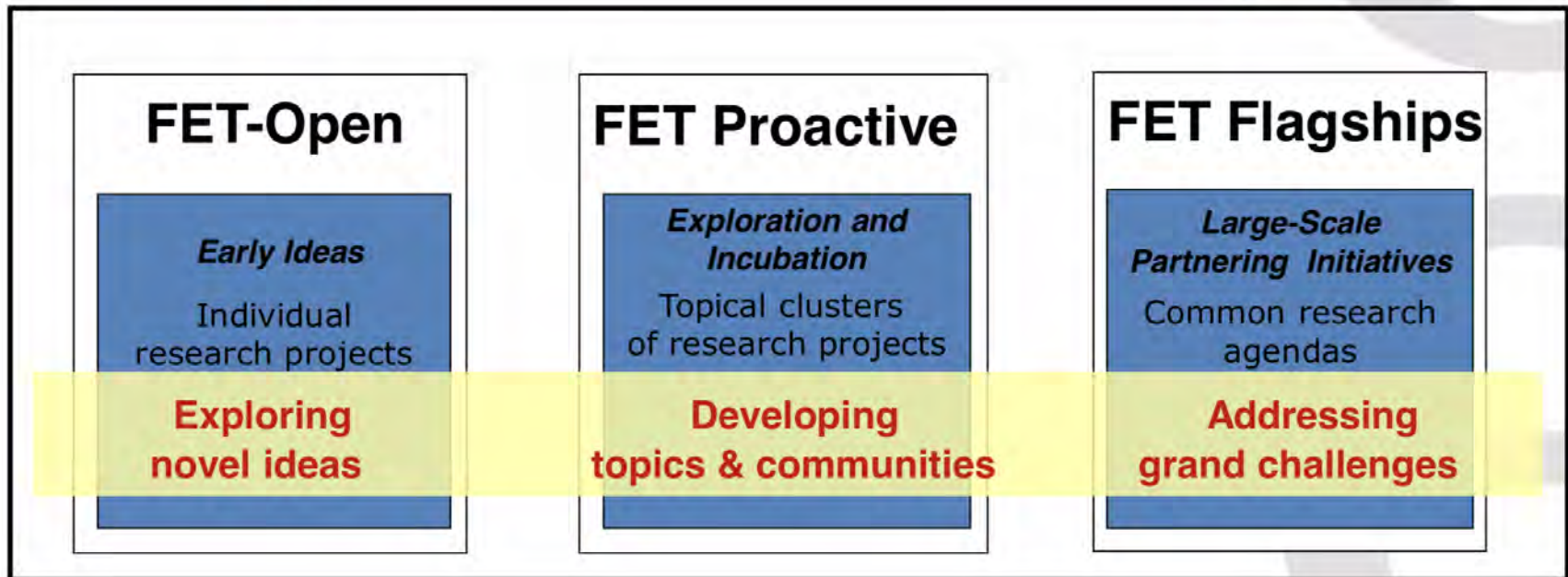
En 2016, la Comisión Europea lanzó una consulta pública sobre las matemáticas en el programa Marco H2020, para alimentar las acciones **top down** del Horizon2020 (2018-20) con contenido matemático innovador. <https://bit.ly/28Y1cwL> .

Entre otras cosas, una de las principales conclusiones fue: "*Two facts motivated this request: today's digital society depends on **mathematics and algorithms**; there is a vast pool of mathematical talent in Europe. The conclusion is that Europe can be first in mathematical applications for **big data, computing** and especially **HPC**, to be first in modern science and innovation.*"

2. FET (Future and Emerging Technologies)



2. FET (Future and Emerging Technologies)



2. FET (Future and Emerging Technologies)

FETOPEN-01-2018-2019-2020 (RIA) II FET OPEN (RIA)

- Proyectos en **colaboración** (min. 3 participantes de 3 países)
- **3 M€** por proyecto
- **36/48 meses** de duración.
- Propuestas de **16 páginas** (15+1)
- **Single step submission.**
- **4 cut-off dates**

Aspectos más repetidos en las convocatorias anteriores:

- 5 socios por proyecto
- Socios de 4 países diferentes
- Duración de 36 meses

Tipo de acción	Presupuesto			Deadlines
	2018	2019	2020	
FETOPEN-01-2018-2019-2020 (RIA)	123,70 M€			15 mayo 2018
		160,40 M€		24 enero 2019
		160,40 M€		27 septiembre 2019
			196,20 M€*	13 mayo 2020

2. FET (Future and Emerging Technologies)

WHAT IS FET-RESEARCH?

- it focuses on **new ideas** which are **foundational** and may have a transformative character,
- it is **risky** (possibility to fail),
- it is **bottom-up** (defined by researchers),
- it is **interdisciplinary**,
- it is **purpose-driven** and aims at **technology** development,
- it is **collaborative** and involves researchers from different countries.

WHAT IS IT NOT?

- it is not **mainstream research**,
- it is not about **small changes** to existing models or approaches,
- it does not rely on **track record** alone,
- it is not **pure basic science**,
- it does not follow a **policy agenda** or **pre-defined topics**,
- it is not **discipline-oriented research**.

2. FET (Future and Emerging Technologies)

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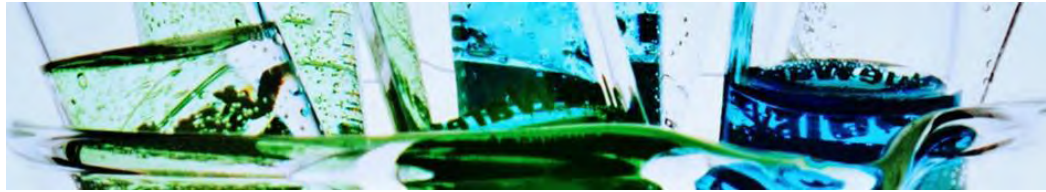
2. FET (Future and Emerging Technologies)

Compliance with FET Gatekeepers!!	Contribution to impacts listed in the WP!!	
Excellence	Impact	Implementation
<p>Clarity of the radical vision of science-enabled technology and its differentiation from current paradigms.</p> <p>Novelty and ambition of the proposed science-to-technology breakthrough that addresses this vision.</p> <p>Range of and added value from interdisciplinary for opening up new areas of research; non-incrementality of the research proposed.</p> <p>High-risk, plausibility and flexibility of the research approach.</p>	<p>The extent to which the outputs of the project would contribute to the expected impact listed in the Work Programme under this topic.</p> <p>Effectiveness of measures and plans to disseminate and use the results (including management of IPR) and to communicate about the project to different target audiences.</p>	<p>Coherence and effectiveness of the research methodology and work plan to achieve project objectives and impacts, including adequate allocation of resources to tasks and partners.</p> <p>Role and complementarity of the participants and extent to which the consortium as a whole brings together the necessary expertise.</p>
<p>Threshold: 4/5 P. 60%</p>	<p>Threshold: 3.5/5 : 20%</p>	<p>3/5 P: 20%</p>

2. FET (Future and Emerging Technologies)

Calls	Total # of eligible proposals	% proposals above threshold	Number of grants	Success rate	Total Budget (M€)
Sep-14	639	39%	24	3,8%	78,1
Mar-15	665	49%	11	1,7%	41
Sep-15	800	43%	11	1,4%	37,8
May-16	544	50%	23	4,2%	87,8
Jan-17	365	52%	26	7,1%	84,8
Sep-17	395	43%	27	6,8%	85,3
May-18	356	45%	38	10,7%	124
Jan-19	421	?	(50?)	11-12%	160
Total	4185		200 (aprox)		700

3. Marie Curie (Individual, ITNs, RISE)



I. General Aspects of Marie Skłodowska-Curie Actions (MSCA)

II Seminario "Ciencia Excelente"
de Horizonte 2020



GOBIERNO
DE ESPAÑA

MINISTERIO
DE EDUCACIÓN
Y COMPETITIVIDAD

FECYT



CONSEJO SUPERIOR
DE INVESTIGACIONES
CIENTÍFICAS



oficina
europea

3. Marie Curie



ITN
Innovative Training Networks

What does it offer?
High-quality research training delivered through interdisciplinary networks, industrial doctorates or joint doctorates.

Who applies?
International networks of research organisations from the academic and non-academic sectors

Who is funded?
Researchers at doctoral level (less than 4 years of full-time research experience and no doctoral degree)

Jan 2020 Last call

TRAINING



IF
Individual Fellowships

What does it offer?
Opportunities to work on personal research projects by moving between countries and possible sectors to acquire new skills.

Who applies?
Individual researchers together with the host organisations

Who is funded?
Postdoctoral researchers

Sep 2020 Last call

RESEARCH + TRAINING



RISE
Research & Innovation Staff Exchange

What does it offer?
The exchanges of staff members involved in research and innovation to develop sustainable collaborative projects and the transfer of knowledge.

Who applies?
International networks of research organisations from the academic and non-academic sectors

Who is funded?
Researchers, technical administrative and managerial staff of any nationality and at all career levels

Apr 2020 Last call

TRAINING + MOBILITY



COFUND
Co-Funding of Regional, National & International Programmes

What does it offer?
Regional national or international programmes to foster excellence in training mobility and career development of researchers

Who applies?
Organisations funding or managing doctoral or fellowships programmes

Who is funded?
Researchers at doctoral and postdoctoral level

Sep 2020 Last call

RECRUITING

3. IF - Individual Fellowship

EUROPEAN FELLOWSHIPS

MS/AC



- For fellows coming to or moving within European countries.
- If moving to a Widening country there will be a second chance to be funded.

GLOBAL FELLOWSHIPS

TC



- For fellows from Europe* going to a third country.
- Transfer of knowledge, through a Return Phase to Europe is mandatory.

3. MSCA

MSCA Objectives

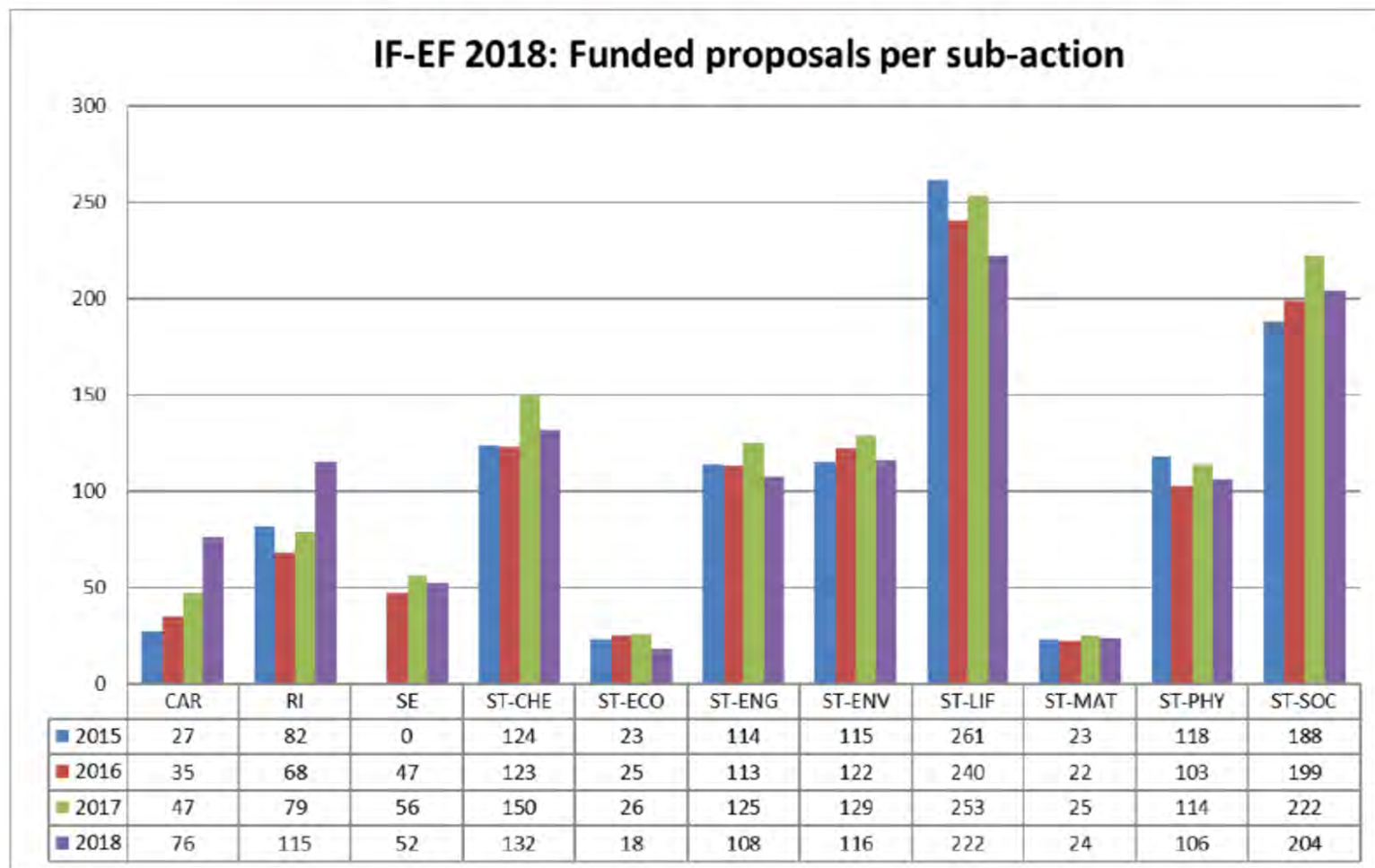
Ensure the optimum **development** and dynamic use of Europe 's **intellectual capital** in order to generate **new skills, knowledge and information**

- Support of the researchers ' **career path** at all stages
- **Mobility** is a key requirement: triple "i" dimension
- Adquisition of new and **complementary skills**
- **Strong industry participation**
- **Excellent working conditions**, gender balance and open recruitment
- **Communication** and **public engagement activities**
- **Bottom-up** approach



3. MSCA

MSCA IF 2018: Funded projects by area (EF)



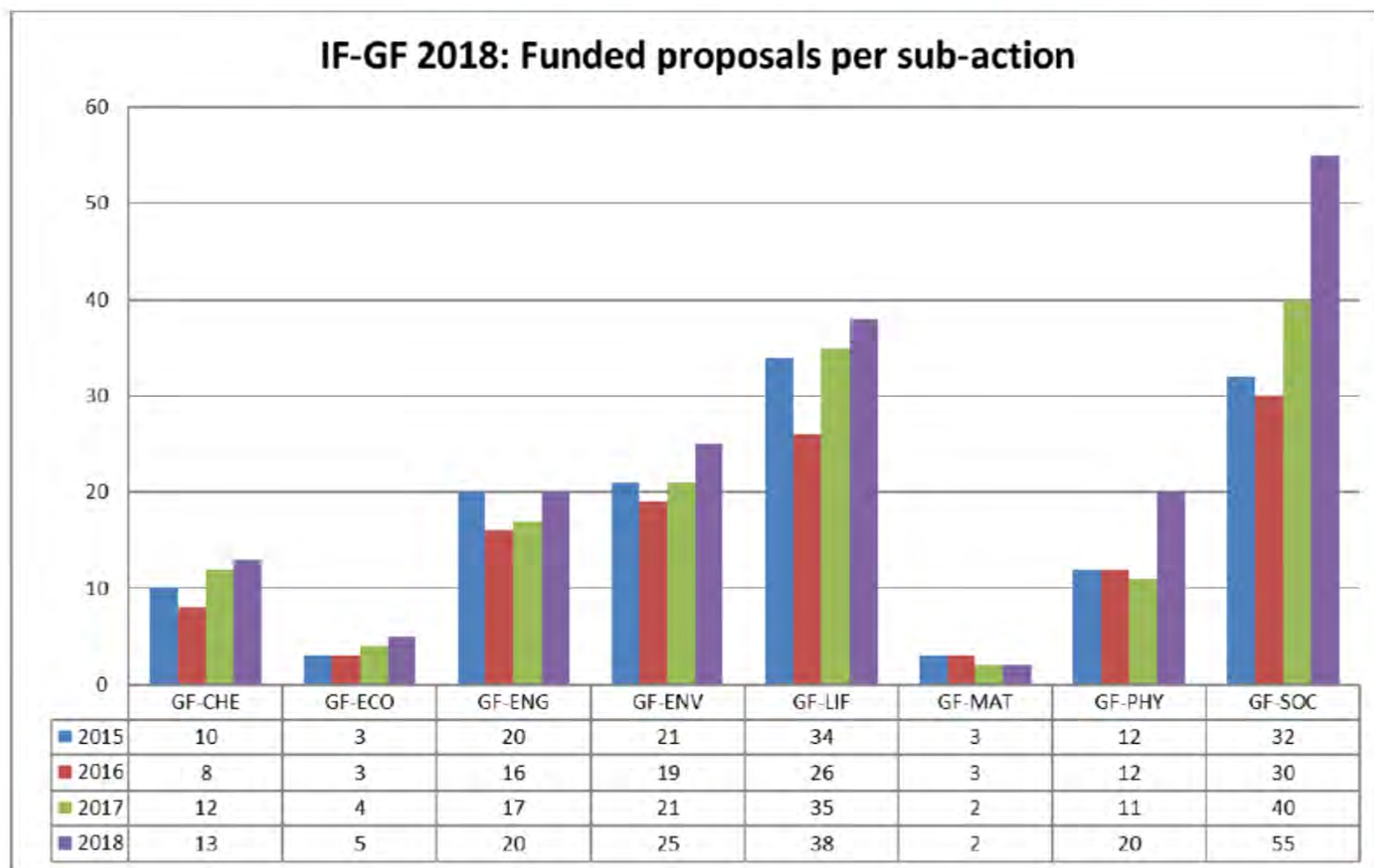
3. MSCA

Cut off marks EF ST – CAR - RI 2014-2018

AREA/PANEL	2014	2015	2016	2017	2018
Chemistry (CHE)	89,6	90,8	91,8	91,4	92,8
Physics (PHY)	90,4	91,2	91,2	90	90,8
Mathematics (MAT)	80,2	91	91,6	91,6	92,6
Life Sciences (LIF)	90,6	92,4	92,2	93	93,6
Economic Sciences (ECO)	86,6	89,8	90,6	89	89,4
ICT and Engineering (ENG)	88,6	90,8	91,8	91,4	93
Social Sciences & Humanities (SOC)	92,8	92,2	92,8	91	92,6
Earth & Environmental Sciences (ENV)	90,4	92,2	92	92,2	92,4
Career Restart Panel (CAR)	87,2	91,2	90,8	91,4	91,2
Reintegration Panel (RI)	90,8	92,2	92,6	93,4	92,4
Society and Enterprise Panel (SE)	NA	NA	80,6	83,6	87

3. MSCA

MSCA IF 2018: Funded projects by area (GF)



3. MSCA

Cut off marks GF 2014-2018

SCIENTIFIC AREA	2014	2015	2016	2017	2018
Chemistry (CHE)	93,6	94	93,6	93,2	92,4
Physics (PHY)	93	93,4	92,6	91,4	90,2
Mathematics (MAT)	92,2	91,6	88,6	93,2	94,2
Life Sciences (LIF)	91,8	93,8	92	91,4	91
Economic Sciences (ECO)	92,4	94	94,4	88,2	93,2
ICT and Engineering (ENG)	93,8	93,8	93,6	93	90
Social Sciences & Humanities (SOC)	92,8	93,6	95	92,4	90,4
Earth & Environmental Sciences (ENV)	93,4	93,6	93,6	92,6	92,6

3. MSCA

<u>IF - Marie Skłodowska-Curie Individual Fellowships</u>		
Excellence	Impact	Quality and efficiency of the implementation
Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects	Enhancing the future career prospects of the researcher after the fellowship	Coherence and effectiveness of the work plan, including the appropriateness of the allocation of tasks and resources
Quality and appropriateness of the training and of the two way transfer of knowledge between the researcher and the host	Quality of the proposed measures to exploit and disseminate the project results	Appropriateness of the management structure and procedures, including risk management
Quality of the supervision and of the integration in the team/institution	Quality of the proposed measures to communicate the project activities to different target audiences	Appropriateness of the institutional environment (infrastructure)
Potential of the researcher to reach or re-enforce professional maturity/independence during the fellowship		

50%

30%

20%

3. MSCA ITN - Innovative Training Networks



3. MSCA

Notas de Corte ITN

	ITN 2015		ITN 2016		ITN 2017		ITN 2018	
CHE	93,4	(9)	94	(9)	94,8	(12)	96	(11)
ECO	92,4	(1)	98,8	(1)	91,4	(1)	97,2	(1)
ENG	94,4	(24)	93	(25)	94,4	(28)	94	(28)
ENV	92,8	(11)	95,4	(9)	95,6	(12)	96,4	(12)
LIF	95,2	(24)	93,8	(26)	95,2	(28)	95	(27)
MAT	88,4	(1)	85,4	(1)	94,2	(1)	93	(1)
PHY	95,2	(6)	93,6	(6)	96,2	(7)	94,2	(6)
SOC	95,2	(7)	97,4	(8)	97,4	(9)	95,8	(8)
EJD	92,6	(8)	94	(8)	92,8	(9)	94,2	(9)
EID	92	(15)	92	(16)	91,4	(20)	90,8	(20)

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50%

30%

20%

3. MSCA RISE - Research and Innovation Staff Exchange

RISE Objectives



**Collaborations
international &
intersectoral**












**Research &
Innovation Staff
Exchanges**



**Transfer of
Knowledge**


3. MSCA


		SENDING (Seconding Staff <u>from</u> Organisation)		
		Academic organisation in MS/AC (1)	Non-academic organisation in MS/AC (2)	Organisation in TC
HOSTING (Receiving seconded staff)	Academic organisation in MS/AC (1)			
	Non-academic organisation in MS/AC (2)			
	Organisation in TC			

3. MSCA


RISE 2014


 CHE 82,6 (11)


 PHY 81,4 (8)


 MAT 76,4 (1)

 LIF 78,2 (15)


 ECO 70,6 (4)


 ENG 78,6 (24)


 SOC 77,2 (10)


 ENV 78,4 (11)


RISE 2015


 CHE 86,4 (9)


 PHY 88,6 (11)


 MAT 84,6 (4)

 LIF 81,4 (18)


 ECO 88 (3)


 ENG 84,6 (26)


 SOC 88,2 (8)


 ENV 90,8 (10)


RISE 2016


 CHE 89 (9)


 PHY 87,6 (7)


 MAT 83,2 (3)

 LIF 82,8 (11)

 ECO 81 (4)

 ENG 83,2 (28)


 SOC 90,8 (13)


 ENV 91,2 (9)


RISE 2017


 CHE 86,4 (7)


 PHY 85,4 (7)


 MAT 86,6 (3)

 LIF 84,8 (12)

 ECO 86 (3)

 ENG 83,2 (27)


 SOC 82,6 (11)

 ENV 88,6 (10)

RISE 2018

 CHE 84,2 (6)

 PHY 87 (6)

 MAT 81,4 (2)

 LIF 78,6 (12)

 ECO 95 (1)

 ENG 85,4 (25)

 SOC 81 (12)

 ENV 84,4 (9)

4. ERC



European Research Council

Established by the European Commission

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European Research Council
Established by the European Commission

Starting Grants

1 Principal Investigator
(2-7 years after PhD)
up to 1.5 M€ (plus add*)
for 5 years

Consolidator Grants

1 Principal Investigator
(7-12 years after PhD)
up to 2.0 M€ (plus add*)
for 5 years

Advanced Grants

1 Principal Investigator
up to 2.5 M€ (plus add*)
for 5 years

Synergy Grants

2 – 4 Principal Investigators
up to 10.0 M€ (plus add*) for 6 years

Proof-of-Concept

Inquiring on the innovation potential
up to 150 k€ for ERC grant
holders

*add: up to 1 M€ in StG/CoG/AdG and 4 M€ in SyG

4. ERC



European Research Council
Established by the European Commission

17 Oct 2019 last call

Starting Grants

1 Principal Investigator
(2-7 years after PhD)
up to 1.5 M€ (plus add*)
for 5 years

Jan 2020 last call

Consolidator Grants

1 Principal Investigator
(7-12 years after PhD)
up to 2.0 M€ (plus add*)
for 5 years

Aug 2020 last call

Advanced Grants

1 Principal Investigator
up to 2.5 M€ (plus add*)
for 5 years

5 Nov 2019 last call

Synergy Grants

2 – 4 Principal Investigators
up to 10.0 M€ (plus add*) for 6 years

2020 last calls

Proof-of-Concept

Inquiring on the innovation potential
up to 150 k€ for ERC grant
holders

2. Acciones Bottom-up: 2.1 Pilar Excelente – La ERC

Starting Grant (StG): nurturing the next generation research leaders.

To support excellent Principal Investigators at the career stage at which they are starting their own independent research team or programme.

Consolidator Grant (CoG): consolidating the next generation research leaders.

To support excellent Principal Investigators at the career stage at which they may still be consolidating their own independent research team or programme.

Advanced Grant (AdG): attracting and rewarding established independent research leaders.

To support excellent Principal Investigators at the career stage at which they are already established research leaders with a recognised track record of research achievements.

Applicant Principal Investigators must demonstrate the ground breaking nature, ambition and feasibility of their scientific proposal.

2. Acciones Bottom-up: 2.1 Pilar Excelente – La ERC

Life Sciences

- LS1 Molecular & structural biology & biochemistry
- LS2 Genetics, genomics, bioinformatics & systems biology
- LS3 Cellular and developmental biology
- LS4 Physiology, pathophysiology & endocrinology
- LS5 Neurosciences & neural disorders
- LS6 Immunity & infection
- LS7 Diagnostic tools, therapies & public health
- LS8 Evolutionary, population & environmental biology
- LS9 Applied life sciences & biotechnology

Social Sciences and Humanities

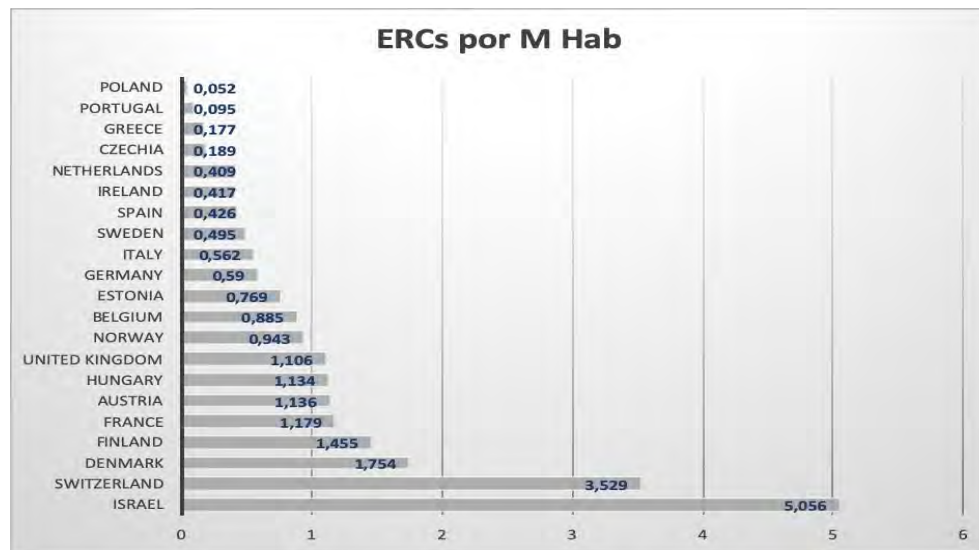
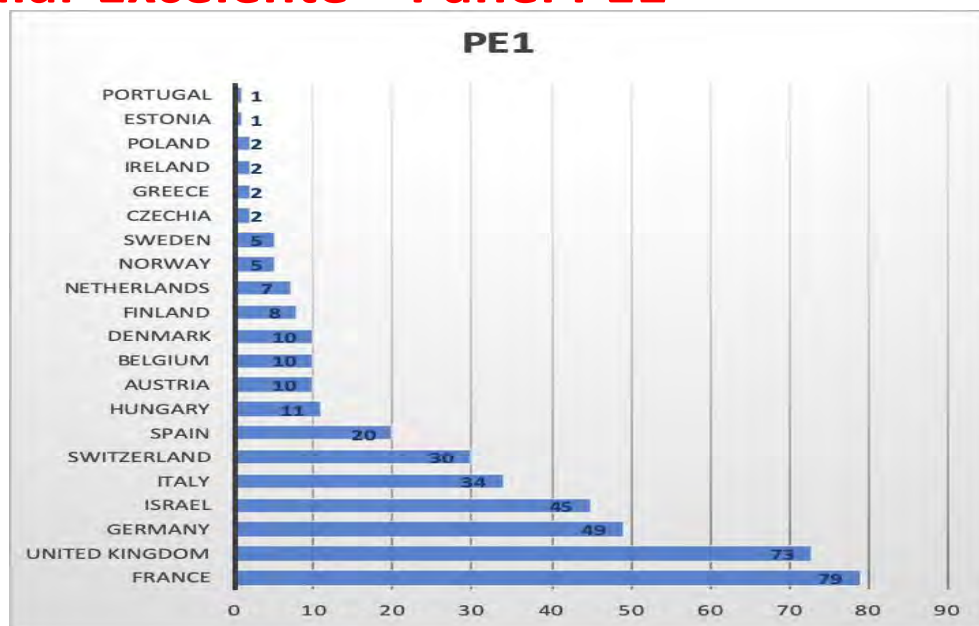
- SH1 Individuals, institutions & markets
- SH2 The social world, diversity, institutions and values
- SH3 Environment, space and population
- SH4 The human mind and its complexity
- SH5 Cultures & cultural production
- SH6 The study of the human past

Physical Sciences & Engineering

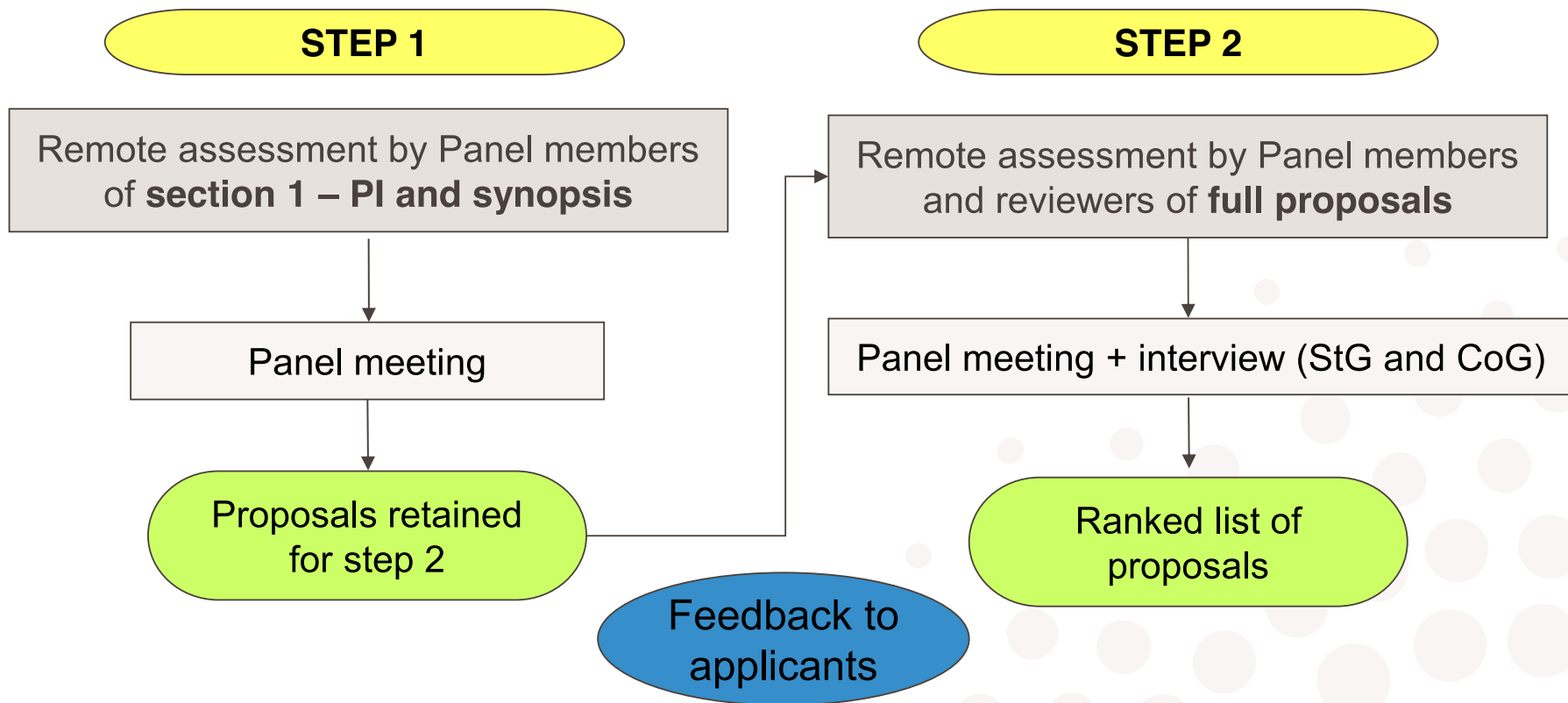
- PE1 Mathematics
- PE2 Fundamental constituents of matter
- PE3 Condensed matter physics
- PE4 Physical & analytical chemical sciences
- PE5 Materials & synthesis
- PE6 Computer science & informatics
- PE7 Systems & communication engineering
- PE8 Products & process engineering
- PE9 Universe sciences
- PE10 Earth system science

2. Acciones Bottom-up: 2.1 Pilar Excelente – Panel PE1

- ❑ En números absolutos de ERCs en el PE1, España (20) está en el 7º lugar detrás de Suiza (30) y delante de Hungría (11). El primer país es Francia (79) seguido de UK con (76).
- ❑ España (46,9 Mhab) es el 5º país en población absoluta, por detrás de Italia (60,5 Mhab) y delante de Polonia (38,4 Mhab). El primer país es Alemania (83) seguido de Francia (67).
- ❑ El ratio numero de ERCs por Mhab en el PE1 es 0,426 ERCs PE1 por Mhab, por delante de Irlanda y detrás de Suecia.
- ❑ 20 ERCs en España en PE1 (Matemáticas): 10 Madrid, 5 País Vasco, 4 Cataluña, 1 Andalucía



2. Acciones Bottom-up: 2.1 Pilar Excelente – La ERC



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- Right balance between generalist + specialized review
 - Appropriate treatment of interdisciplinary proposals
 - Good cost-benefit ratio

2. Acciones Bottom-up: 2.1 Pilar Excelente – La ERC

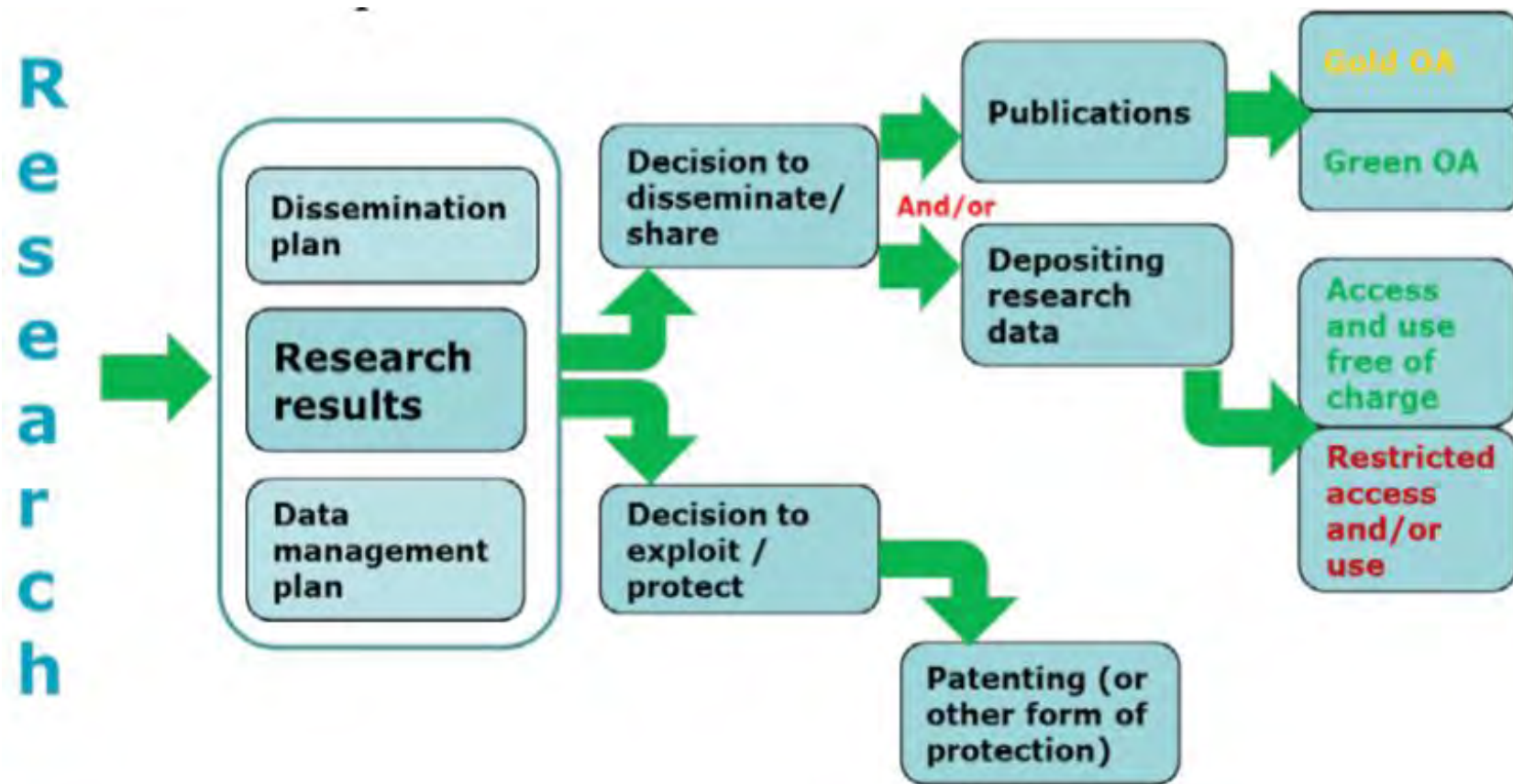
Evaluation of *excellence* at two levels:

- **Excellence of the Research Project**
 - ✓ Ground breaking nature
 - ✓ Potential impact
 - ✓ Scientific Approach
- **Excellence of the Principal Investigator**
 - ✓ Intellectual capacity
 - ✓ Creativity
 - ✓ Commitment

❑ Recomendaciones finales

- ❖ Conocer bien las convocatorias y conocerlas con el suficiente tiempo (3-5 meses)
- ❖ Hacer pequeñas búsquedas de lo ya financiado en el tema y comparar la idea, el CV, la formación, etc con lo que se ha financiado ya (benchmark)
- ❖ El panel y la propuesta deben estar unidos
 - ❖ Los teoremas podrían encajar en bottom-up (ERC, MSCA)
 - ❖ Las matemáticas básicas/aplicadas intentar llevarlas a retos (top-down)
- ❖ La propuesta no es un paper
- ❖ Adaptar la idea de proyecto a las 3 grandes secciones de evaluación del H2020
- ❖ Apoyarse en el personal cualificado
- ❖ Recordar que no será evaluado por super expertos en tu tópico
- ❖ Conocer los temas de moda en el tópico y darse a conocer
- ❖ Buscar partners allá donde deje el tópico. Entender la problemática matemática de los retos y ser proactivo.

❑ ¿qué es el Open Access y para que sirve?



❑ ¿qué es el Open Access y para que sirve?

- **Self-archiving (also called 'Green' open access)** means that the published article or the final peer-reviewed manuscript (**preprint or postprint**) is archived by the researcher in an **online repository before, after or alongside its publication**. Access to the article is often – but not necessarily - delayed ('embargo period') as some scientific publishers may wish to recoup their investment by selling subscriptions and charging pay-per-download view fees during an exclusivity period
- **Open access publishing (also called 'Gold' open access)** means that an article is immediately provided in open access mode by the scientific publisher. There are different alternatives:
 - Free Open Access journals (these normally belong to academic institutions)
 - Open Access under payment: The associated costs are shifted away from readers, and instead charged to the research institute to which the researcher is affiliated, or to the funding agency supporting the research (cost per paper around 1.000 €). **These are eligible costs in H2020 projects.**
 - Traditional journals where after an embargo period of 6 or 12 months allow access the file.

- **Preprint (i.e. pre-referring)**



- **PostPrint (i.e. final draft post-refereeing)**



- **Publisher's version**



- Repositorios Españoles recolectados <https://recolecta.fecyt.es/repositorios-recolectados>

ArXiv	Repositorios UE
Fuera de la unión europea	Conectados a OpenAire
Desconectado de los proyectos europeos (justificación)	Activación inmediata en los proyectos europeos.
Temáticos para física, matemáticas y química	Generalistas
Sólo para artículos	Válido para todo tipo de publicación (tesis, artículo, confence papers, etc)
No contempla datos	Válido para datos