RFG 2018

RESOURCES FOR FUTURE GENERATIONS | VANCOUVER, CANADA

THE PREMIER CONFERENCE ON
ENERGY, MINERALS, WATER, THE EARTH,
EDUCATION & KNOWLEDGE, RESOURCES & SOCIETY

June 16-21, 2018

The Horizon 2020 INTERMIN Project

Michael Neumann, Peter Müller & Isabel Fernandez

RFG 2018

INTERMIN

INTERNATIONAL NETWORK OF
RAW MATERIALS TRAINING CENTRES

RFG 2018

The main targets are:

- **Create a self-sustainable long-term lasting international network of training centres for professionals;**
- **Involve educational and research institutions in the EU and the leading counterparts in third countries;**
- **Map skills and knowledge in the EU and the third countries, identify key knowledge gaps and emerging needs;**
- **Develop a roadmap for improving skills and knowledge;**
- **Create and launch a joint international training programme by a merger of competences and scope of existing training programmes;**

RFG 2018

The specific objectives of INTERMIN are:

- Develop common metrics and reference points for quality assurance and recognition of training;
- Develop a comprehensive competency model for employment across the raw materials sector;
- Introduce an international qualification framework for technical and vocational training programs;
- Create a conceptual framework for the development of joint educational training programs based on present and future requirements by employers;
- Optimize future interaction and collaboration in Europe and internationally with the help of the INTERMIN online educational platform.

RFG 2018

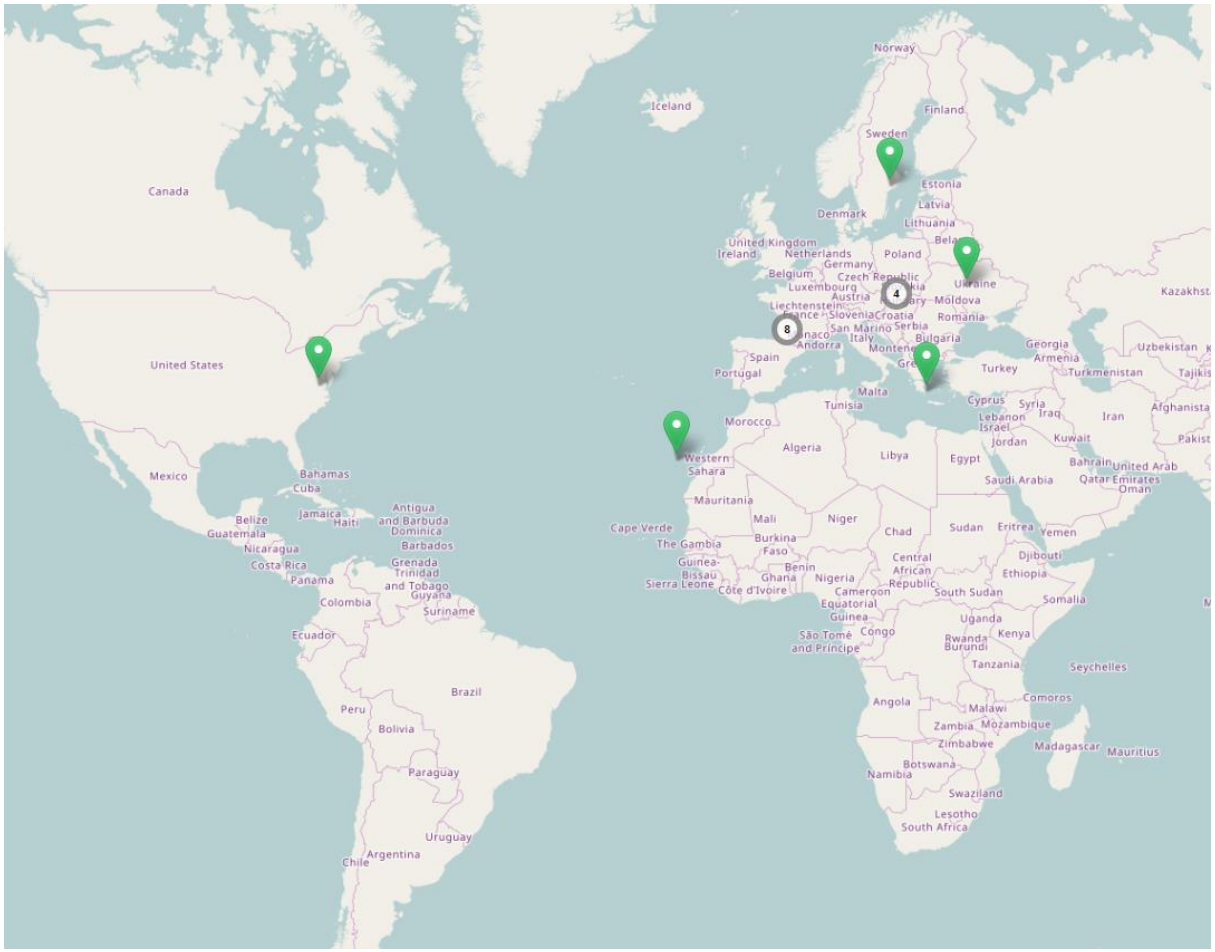
- **To build up this network INTERMIN will show critical disconnections between available education and employers' needs;**
- **By INTERMIN short and medium-term actions will be advanced to close current skills' gaps and enhance existing education and training at the international level.**
- **On the long-term INTERMIN will enable mutual recognition of curricula and will foster cooperation between employers, educational institutions and professional organizations to draft training programs that offer continuous professional development and address future qualifications and skills' needs.**

RFG 2018

The INTERMIN partners:

AMERICAN GEOLOGICAL INSTITUTE		USA
ASOCIACION DE SERVICIOS DE GEOLOGIA Y MINERIA IBEROAMERICANOS		Spain
BUREAU DE RECHERCHES GEOLOGIQUES ET MINIERES		France
CESKA GEOLOGICKA SLUZBA		Czech Republic
COORDINATING COMMITTEE FOR GEOSCIENCE PROGRAMMES...		Thailand
EuroGeoSurveys - EGS		Belgium
FEDERATION EUROPEENNE DES GEOLOGUES		France
INSTITOUTO GEOLOGIKON KAI METALLEFTIKON EREVNON		Greece
INSTITUTO GEOLÓGICO Y MINERO DE ESPAÑA	(Coordinator)	Spain
LA PALMA RESEARCH CENTRE FOR FUTURE STUDIES SL		Spain
Laboratorio Nacional de Energia e Geologia I.P.		Portugal
MINING AND GEOLOGICAL SURVEY OF HUNGARY		Hungary
MONTANUNIVERSITAT LEOBEN		Austria
PANSTWOWY INSTYTUT GEOLOGICZNY - PANSTWOWY INSTYTUT BADAWCZY		Poland
STATE RESEARCH AND DEVELOPMENT ENTERPRISE STATE INFORMATION GEOL		Ukraine
SVERIGES GEOLOGISKA UNDERSOKNING		Sweden
THE UNIVERSITY OF QUEENSLAND		Australia
UNIVERSIDAD POLITECNICA DE MADRID		Spain
YOUNG EARTH SCIENTIST NETWORK		Belgium

RFG 2018


Canada
United States
Mexico
Iceland
Norway
Sweden
Finland
Estonia
Latvia
Lithuania
Denmark
United Kingdom
Ireland
Netherlands
Belgium
Germany
Poland
Czech Republic
Luxembourg
Austria
Liechtenstein
Slovenia
Croatia
Serbia
San Marino
Italy
Bulgaria
Romania
Moldova
Ukraine
Spain
Portugal
Malta
Tunisia
Morocco
Algeria
Libya
Egypt
Western Sahara
Mauritania
Cape Verde
The Gambia
Guinea-Bissau
Sierra Leone
Côte d'Ivoire
Mali
Burkina Faso
Niger
Chad
Sudan
Eritrea
Yemen
Djibouti
Ethiopia
Somalia
Ghana
Nigeria
Benin
Cameroon
Central African Republic
South Sudan
Equatorial Guinea
São Tomé and Principe
Congo
Uganda
Kenya
Rwanda
Burundi
Tanzania
Seychelles
Comoros
Angola
Malawi
Zambia
Mozambique
Zimbabwe
Madagascar
Mauritius
Botswana
Namibia
Swaziland
Lesotho
South Africa
Georgia
Armenia
Turkey
Turkmenistan
Uzbekistan
Kazakhst
Cyprus
Syria
Iraq
Iran
Afghanista
Lebanon
Israel
Jordan
Kuwait
Pakist
Bahrain
United Arab Emirates
Qatar
Oman
Saudi Arabia
Bahamas
Cuba
Jamaica
Haiti
Antigua and Barbuda
Dominica
Barbados
Belize
Guatemala
Nicaragua
Costa Rica
Panama
Grenada
Trinidad and Tobago
Guyana
Suriname
Colombia
Ecuador
Brazil
Peru
Bolivia
Paraguay
Uruguay
Argentina
Chile
4
8

RFG 2018

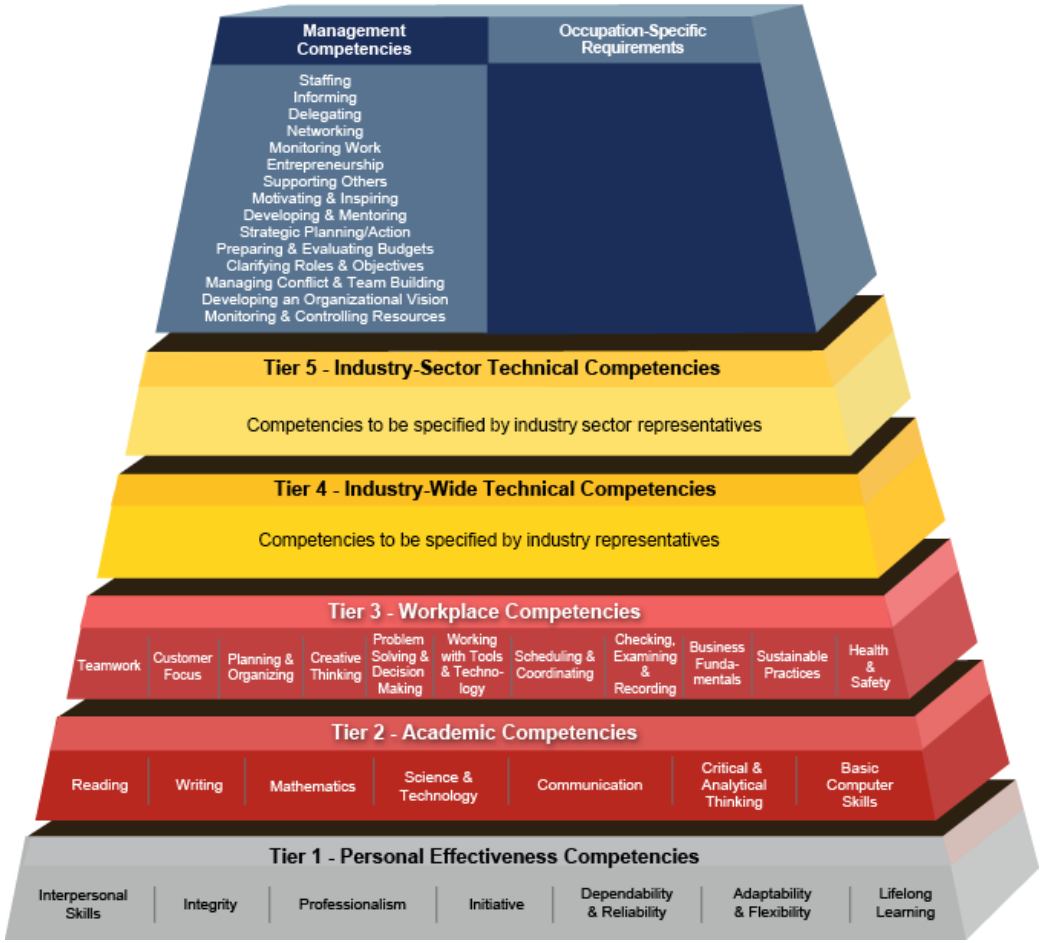
Topic:	Raw materials international co-operation
Project Type:	Coordination & Support (CSA)
Total budget:	1.266.021 €
EU Contribution:	1.266.021 €
Call ID:	H2020-SC5-2017-OneStageB
Start date:	01/02/2018
End date:	31/01/2021

RFG 2018

Ernst & Young ranks skills shortages of the mining and metal industry as main Business Risk

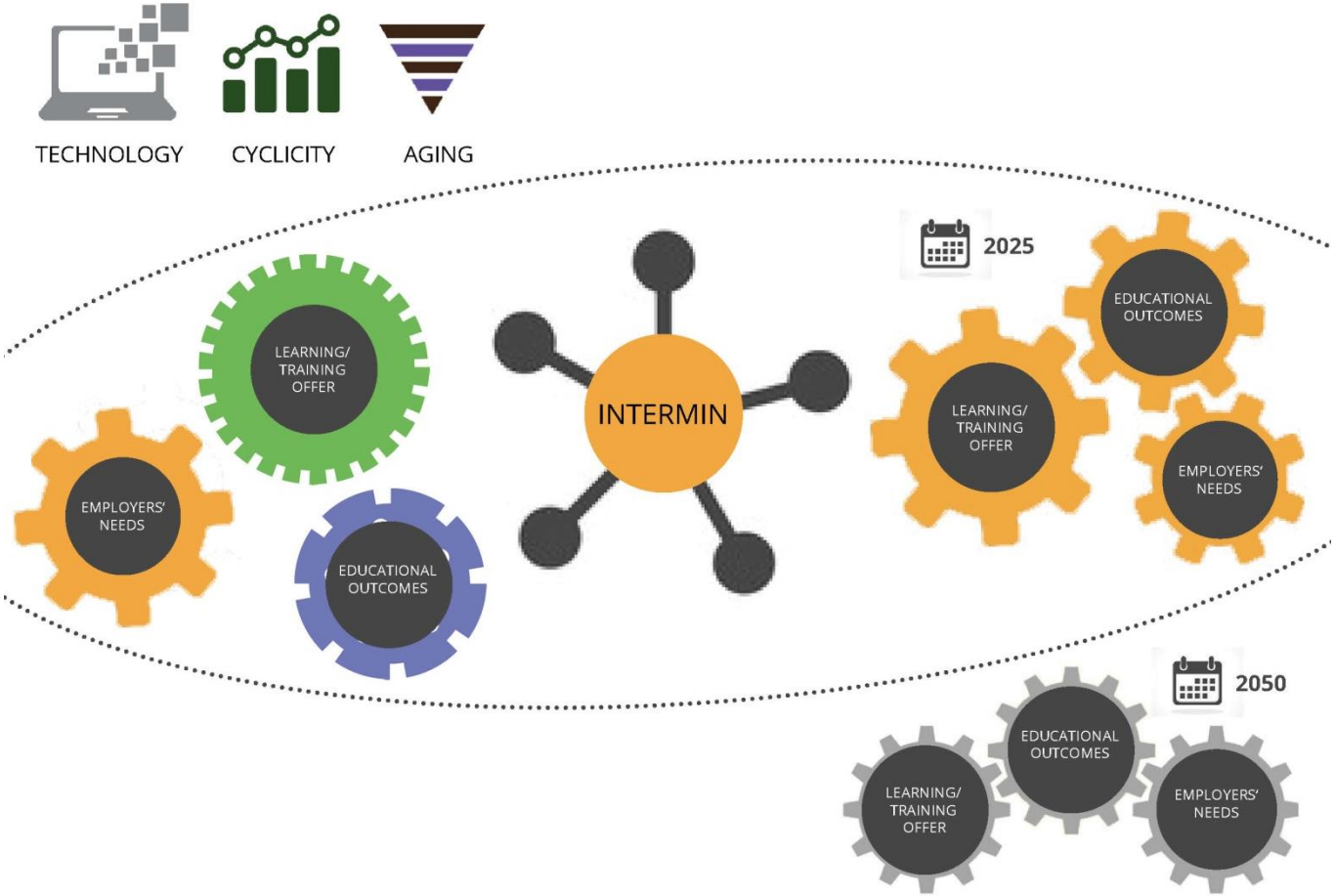
Top 10 risks	2016-2017	Over 9 years	2008 (peak of the super cycle)
01	Cash optimization	01	Skills shortage
02	Capital access	02	Industry consolidation
03	Productivity	03	Infrastructure access
04	Social license to operate	04	Social license to operate
05	Transparency	05	Climate change
06	Switch to growth	06	Rising costs
07	Access to energy	07	Pipeline shrinkage
08	Joint ventures	08	Resource nationalism
09	Cybersecurity	09	Access to energy
10	Innovation	10	Increased regulation

Mining Careers at different skills levels - Australian Mining Industry



Building blocks of the INTERMIN competency model

RFG 2018



Representation of contextual environment and logical approach of INTERMIN

RFG 2018

RFG 2018

European Geosciences Organizations / Networks
- Association of European Geological Societies
- CRM_InnoNet
- E-MRS
- UNEP
- European Association of Geoscientists and Engineers
- European Federation of Associations of Environmental Professionals
- European Federation of Geologists
- European Geoparks Network
- EuroGeoSurveys
- European Geothermal Energy Council (EGEC)
- European Geosciences Union
- European Network on Soil Awareness
- European Technologic Platform on Sustainable Mineral Resources
- M-ERA-NET

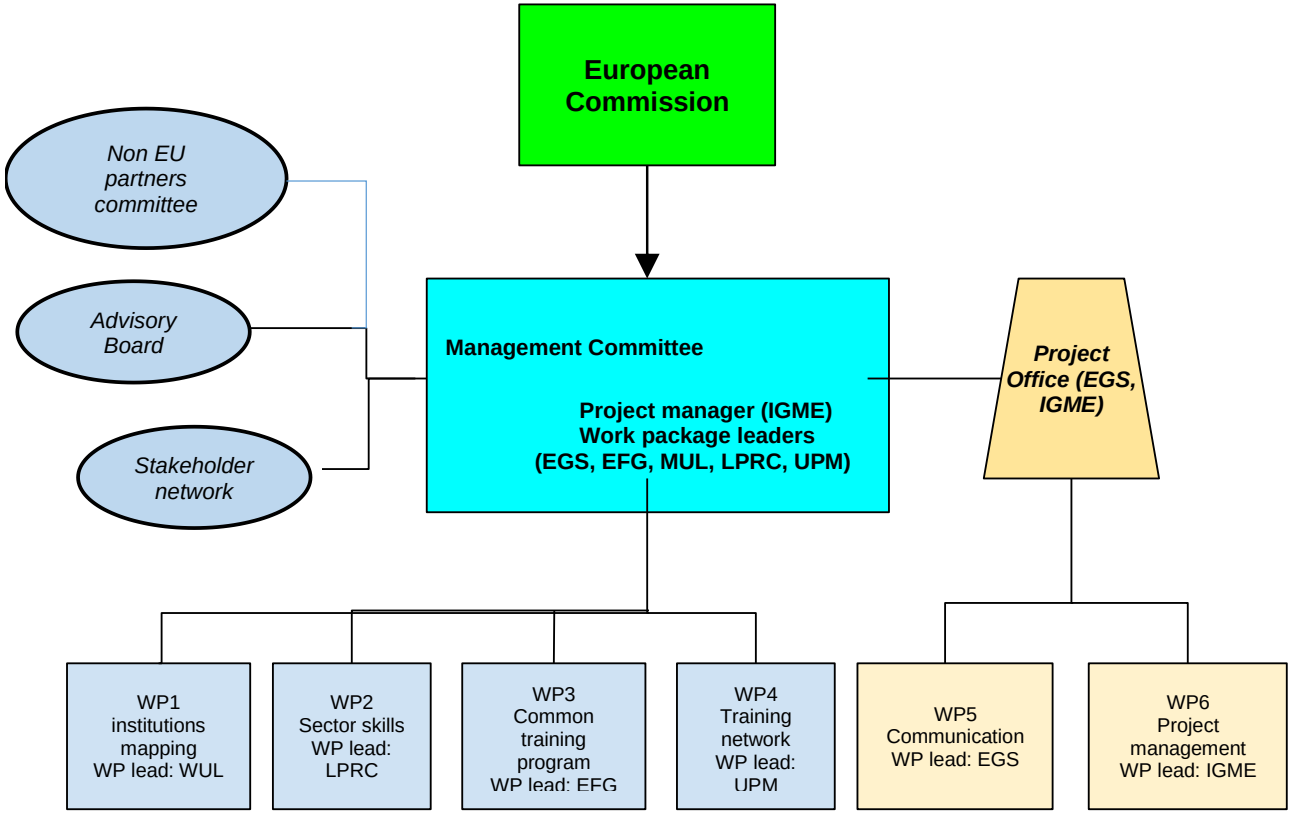
European Federation of Geologists Members
http://eurogeologists.eu/members/
- Union Belgo-Luxembourgeoise des Geólogues
- Hrvatsko geološko društvo
- Cyprus Association of Geologists And Mining Engineers
- Česká asociace ložiskových geologů
- Dansk Geologisk Forening
- Ympäristöasiantuntijoiden Keskusliitto
- Société Géologique de France
- Berufsverband Deutscher Geowissenchaftler e.V.
- Σύλλογος Ελλήνων Γεωλόγων
- Magyarhoni Földtani Társulat
- Institute of Geologists of Ireland
- Consiglio Nazionale dei Geologi
- Koninklijk Nederlands Geologisch Mijnbouwkundig Genootschap
- Polskie Stowarzyszenie Wyceny Złóż Kopalin
- Associação Portuguesa de Geólogos
- Национальная ассоциация по экспертизе недр
- Srpsko Geolosko Drustvo
- Slovensko Geolosko Drustvo
- Ilustre Colégio Oficial de Geologos
- Geosektionen
- Schweizer Geologen Verband / Association Suissse des Géologues
- Спілка геологів України
- The Geological Society of London

International Geosciences Organisations / Networks
- African Association of Women in Geosciences
- American Geosciences Institute
- Asia Oceania Geosciences Society
- Asociación de Servicios de Geología y Minería Iberoamericanos
- Association of Environmental and Engineering Geologists
- Association of Geoscientists for International Development
- Australian Institute of Geoscientists
- Canadian Federation of Earth Sciences
- BILAT USA 2.0
- CYTED
- Committee for Mineral Reserves International Reporting Standards
- Directory of Geoscience Organisations of the World
- ENSOCIO-LA - Strategic, Sustainable R&I Cooperation with Latin America
- ERANET-LAC
- ERAFRICA
- ERA-CAN+
- EU-Japan Centre for Industrial Cooperation
- Edumine
- Federation of International Geo-engineering Societies (FedIGS)
- Geological Society of Africa
- Geological Society of America
- Geological Society of South Africa
- Geólogos sin Fronteras
- Geoscientists Canada
- Infomine
- International Association for Engineering Geology and the Environment
- International Association of Geomorphologists
- International Geoscience Education Organisation
- IUGS
- IUGS Task Group on Global Geoscience Professionalism
- IUMRS
- JEUPISTE - Japan-EU Partnership in Innovation, Science and Technology
- OneGeology
- UNESCO, Earth Sciences for Society
- World Geologists / Geólogos del Mundo
- YES Network

EuroGeoSurveys Members
http://www.eurogeosurveys.org/about-us/members/
- Albanian Geological Survey
- Geological Survey of Austria
- Geological Survey of Belgium
- Geological Survey of Bosnia and Herzegovina
- Geological Survey of Republic of Srpska
- Croatian Geological Survey
- Cyprus Ministry of Agriculture, Natural Resources and Environment Geological Survey Department
- Czech Geological Survey
- Geological Survey of Denmark and Greenland
- Geological Survey of Estonia
- Geological Survey of Finland
- Bureau de Recherches Géologiques et Minières
- Bundesanstalt für Geowissenschaften und Rohstoffe
- Geologisches Landesamt Hamburg
- National Center for Sustainable Development – Institute of Geology and Mineral Exploration
- Geological and Geophysical Institute of Hungary
- Geological Survey of Ireland
- Istituto Superiore per la Protezione e la Ricerca Ambientale – Geological Survey of Italy
- Geological, Seismic and Soil Survey of Emilia-Romagna
- Kosovo Geological Survey
- Geological Survey of Lithuania
- Service Géologique du Luxembourg
- Continental Shelf Department
- Geological Survey of the Netherlands
- Geological Survey of Norway
- Polish Geological Institute
- Laboratório Nacional de Energia e Geologia
- Geological Institute of Romania
- A.P. Karpinsky All Russia Geological Research Institute
- State Geological Institute of Dionyz Stur
- Geological Survey of Slovenia
- Instituto Geologico y Minero de Espana
- Institut Cartogràfic i Geològic de Catalunya
- Sveriges Geologiska Undersökning
- Bundesamt für Landestopografie, Landesgeologie
- State Geological and Subsurface Survey of Ukraine
- State Research and Development Enterprise "Geoinform of Ukraine"
- British Geological Survey

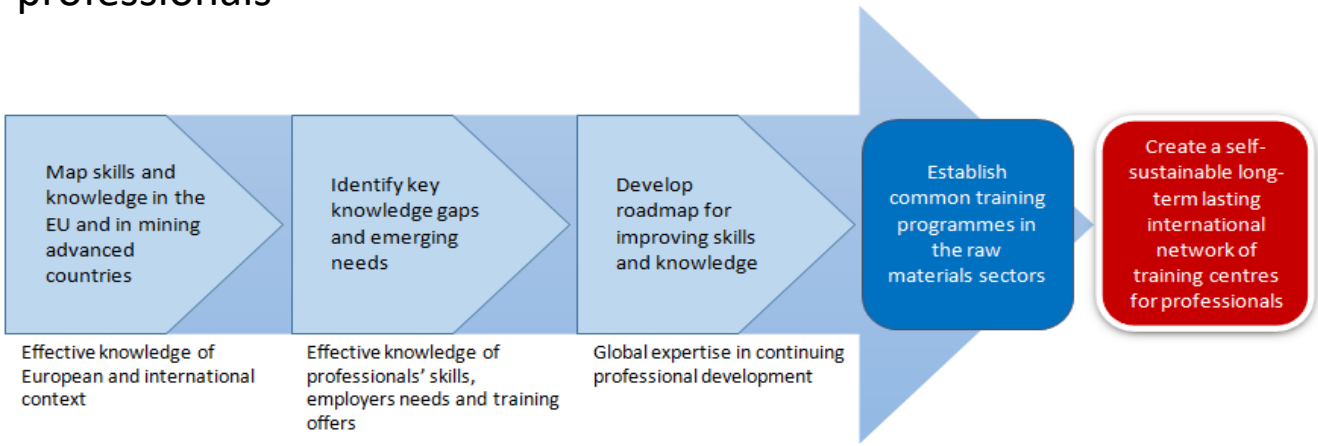
List of the existing networks of geoscientists that will be used to disseminate INTERMIN

Management structure of INTERMIN



RFG 2018

Consortium competences to respond to the specific call aims and create the international network of training centres for raw materials' professionals



IGME	EGS	EFG
EGS	BRGM	MUL
BRGM	LPRC	AGI
ASGMI	EFG	UQ
UPM	MUL	YES
EFG	CCOP	
MUL	AGI	
CCOP	UQ	
AGI	YES	
UQ		
PGI		
YES		
SGU		

RFG 2018

- **The INTERMIN international network of technical and vocational training centers for professionals will ensure that training programs will be created that match the needs of raw materials' employers and professionals.**
- **Collaboration will use the capabilities of the network members, communication technologies and globalization to utilize the educational platform to deliver interactive online services that provide trainers and learners with information, tools and resources to support and enhance training delivery and management.**

RFG 2018

Geoscience University Degree Program Portal – GUIDE

- Comparison of BSc and MSc program curricula in geosciences
- Joint EFG-BDG initiative
- Embedded into the INTERMIN project
- Extension of the existing web portal www.geo-studiengaenge.de

Why?

- Provision of information from universities very different
- Limited knowledge about available programs
- Limited mobility of students
- Unnecessary high drop-out rates
- GUIDE supports international exchange and mobility
- GUIDE promotes comparibility and quality assurance

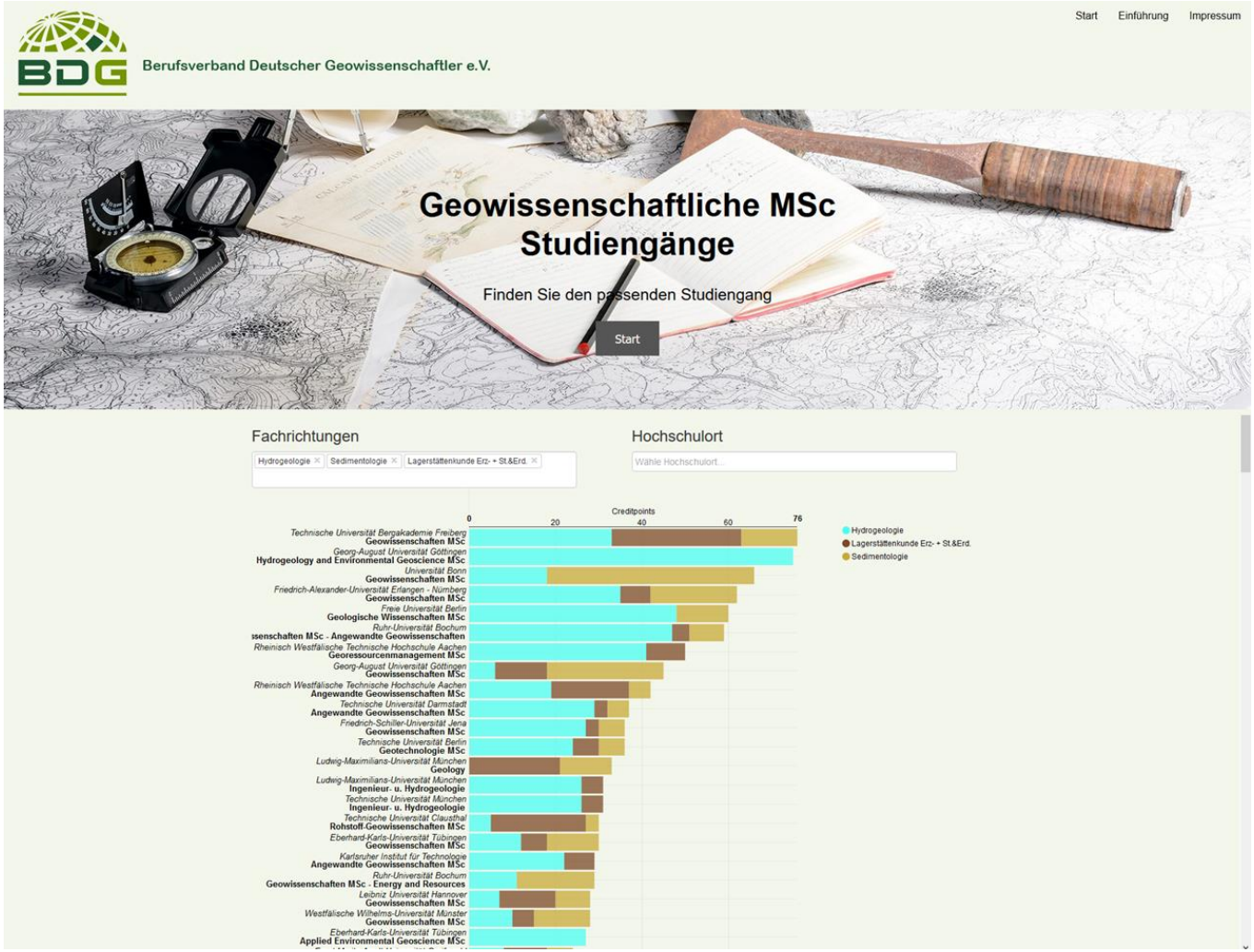
RFG 2018

Geoscience University Degree Program Portal – GUIDE

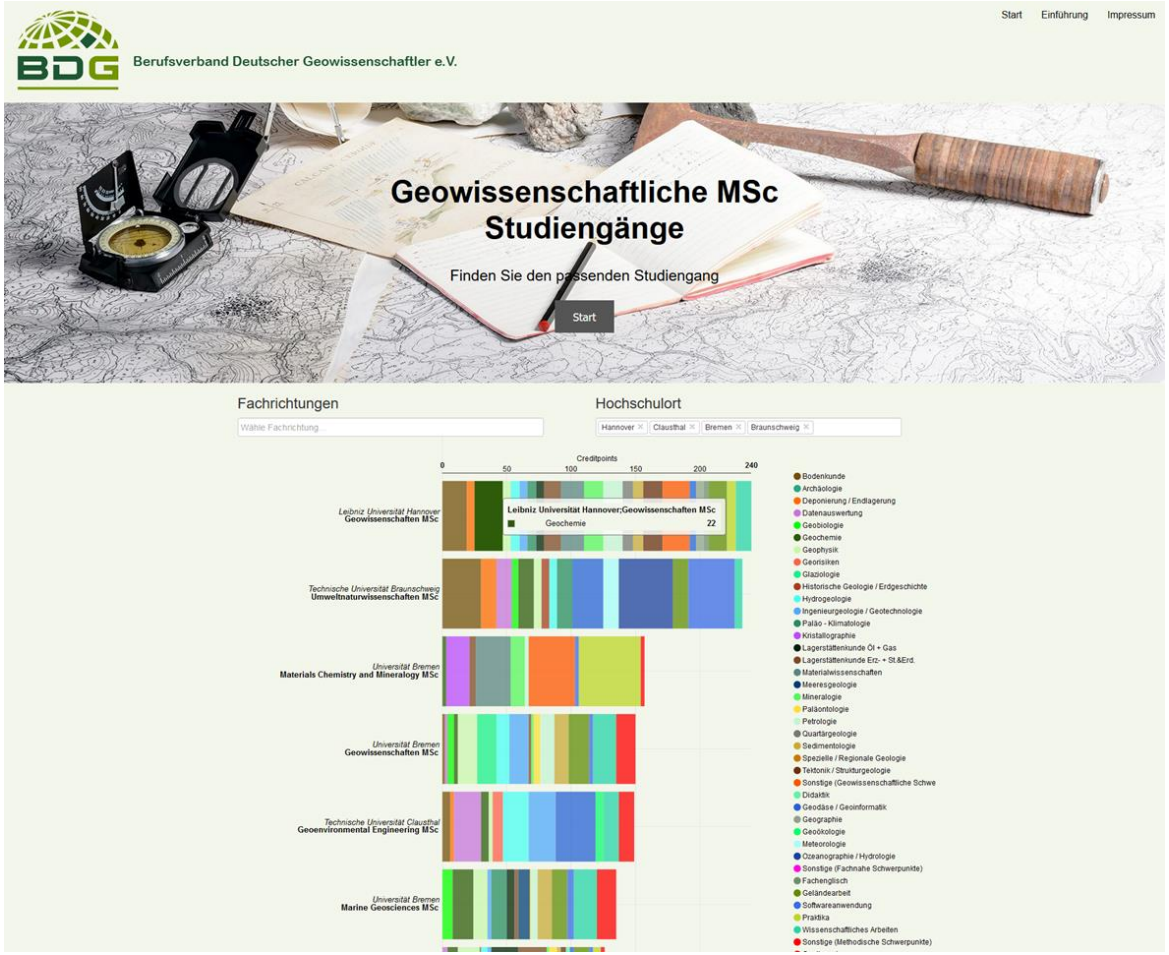
Future activities (2018-2020)

- Integration of EU-countries
- All geoscientific BSc und MSc programs
- More functionalities and visualizations
- Comparison between universities
- Official launch in May 2020

RFG 2018


Start
Einführung
Impressum
BDG
Berufsverband Deutscher Geowissenschaftler e.V.
Geowissenschaftliche MSc Studiengänge
Finden Sie den passenden Studiengang
Start
Fachrichtungen
Hydrogeologie
Sedimentologie
Lagerstättenkunde Erz- + St.&Erd.
Hochschulort
Wähle Hochschulort...
Creditpoints
0
20
40
60
76
Technische Universität Bergakademie Freiberg
Geowissenschaften MSc
Georg-August Universität Göttingen
Hydrogeology and Environmental Geoscience MSc
Universität Bonn
Geowissenschaften MSc
Friedrich-Alexander-Universität Erlangen - Nürnberg
Geowissenschaften MSc
Freie Universität Berlin
Geologische Wissenschaften MSc
Ruhr-Universität Bochum
ssenschaften MSc - Angewandte Geowissenschaften
Rheinisch Westfälische Technische Hochschule Aachen
Georessourcenmanagement MSc
Georg-August Universität Göttingen
Geowissenschaften MSc
Rheinisch Westfälische Technische Hochschule Aachen
Angewandte Geowissenschaften MSc
Technische Universität Darmstadt
Angewandte Geowissenschaften MSc
Friedrich-Schiller-Universität Jena
Geowissenschaften MSc
Technische Universität Berlin
Geotechnologie MSc
Ludwig-Maximilians-Universität München
Geology
Ludwig-Maximilians-Universität München
Ingenieur- u. Hydrogeologie
Technische Universität München
Ingenieur- u. Hydrogeologie
Technische Universität Clausthal
Rohstoff-Geowissenschaften MSc
Eberhard-Karls-Universität Tübingen
Geowissenschaften MSc
Karlsruher Institut für Technologie
Angewandte Geowissenschaften MSc
Ruhr-Universität Bochum
Geowissenschaften MSc - Energy and Resources
Leibniz Universität Hannover
Geowissenschaften MSc
Westfälische Wilhelms-Universität Münster
Geowissenschaften MSc
Eberhard-Karls-Universität Tübingen
Applied Environmental Geoscience MSc
Hydrogeologie
Lagerstättenkunde Erz- + St.&Erd.
Sedimentologie

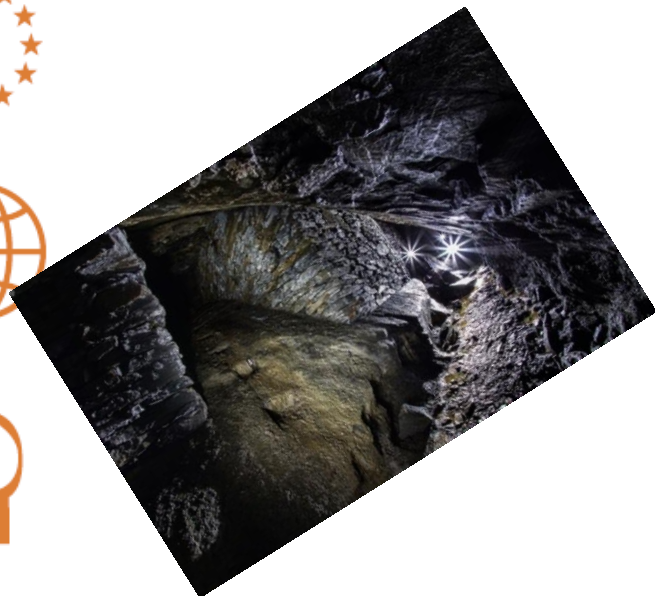
RFG 2018


Start
Einführung
Impressum
BDG
Berufsverband Deutscher Geowissenschaftler e.V.
Geowissenschaftliche MSc Studiengänge
Finden Sie den passenden Studiengang
Start
Fachrichtungen
Wähle Fachrichtung...
Hochschulort
Hannover
Clausthal
Bremen
Braunschweig
Creditpoints
0
50
100
150
200
240
Leibniz Universität Hannover
Geowissenschaften MSc
Leibniz Universität Hannover;Geowissenschaften MSc
Geochemie
22
Technische Universität Braunschweig
Umweltnaturwissenschaften MSc
Universität Bremen
Materials Chemistry and Mineralogy MSc
Universität Bremen
Geowissenschaften MSc
Technische Universität Clausthal
Geoenvironmental Engineering MSc
Universität Bremen
Marine Geosciences MSc
Bodenkunde
Archäologie
Deponierung / Endlagerung
Datenauswertung
Geobiologie
Geochemie
Geophysik
Georisiken
Glaziologie
Historische Geologie / Erdgeschichte
Hydrogeologie
Ingenieurgeologie / Geotechnologie
Paläo - Klimatologie
Kristallographie
Lagerstättenkunde Öl + Gas
Lagerstättenkunde Erz- + St.&Erd.
Materialwissenschaften
Meeresgeologie
Mineralogie
Paläontologie
Petrologie
Quartärgeologie
Sedimentologie
Spezielle / Regionale Geologie
Tektonik / Strukturgeologie
Sonstige (Geowissenschaftliche Schwe
Didaktik
Geodäse / Geoinformatik
Geographie
Geoökologie
Meteorologie
Ozeanographie / Hydrologie
Sonstige (Fachnahe Schwerpunkte)
Fachenglisch
Geländearbeit
Softwareanwendung
Praktika
Wissenschaftliches Arbeiten
Sonstige (Methodische Schwerpunkte)

RFG 2018

- **First pan-European starting points are the EFG Endorsed Training Courses, the EuroWorkshops and the International Mentoring Program of the European Federation of Geologists (EFG).**
- **The EFG is a pan-European professional organisation of 27 National Associations, based in Brussels/Belgium.**

RFG 2018



Thank you
&
Glückauf !

Michael U. C. Neumann efg.vicepresident@eurogeologists.eu
Peter Müller mueller@geoberuf.de
Isabel Fernandez isabel.fernandez@eurogeologists.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 690008