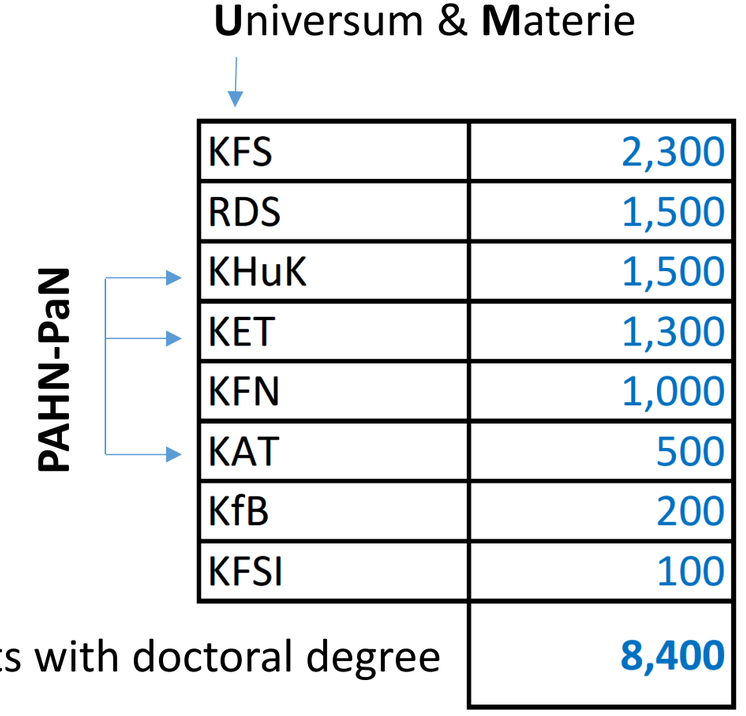
Zusammenarbeit der Communities

ErUM-Data, NFDI

Martin Erdmann zusammen mit ganz vielen Kolleg_innen

6-Mai-2020

Erforschung von
Universum & **M**aterie



ErUM: Portfolio of measures to master digitization

Science community BMBF

Knowledge distribution in digitization

Tenure track programme

Challenges and Opportunities of Digital Transformation in Fundamental Research on Universe and Matter

Recommendations of the ErUM Committees
[ErUM - Exploration of the Universe and Matter]
29 April 2019

Research Data

Data models
Management
Curation
…

Big Data Analytics

Algorithms
Autonomization
Control & preservation
…

Federated Infrastructures

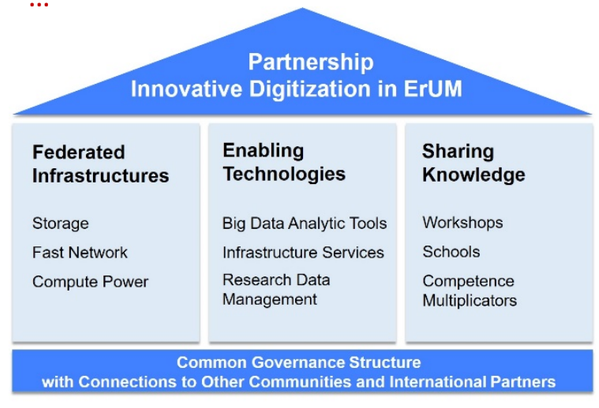
Compute power
Utilization
Workflows
…

User Interface

Scientists questions
Developers work
User support
…

Communication

Partnership
Pioneering efforts
Training
…



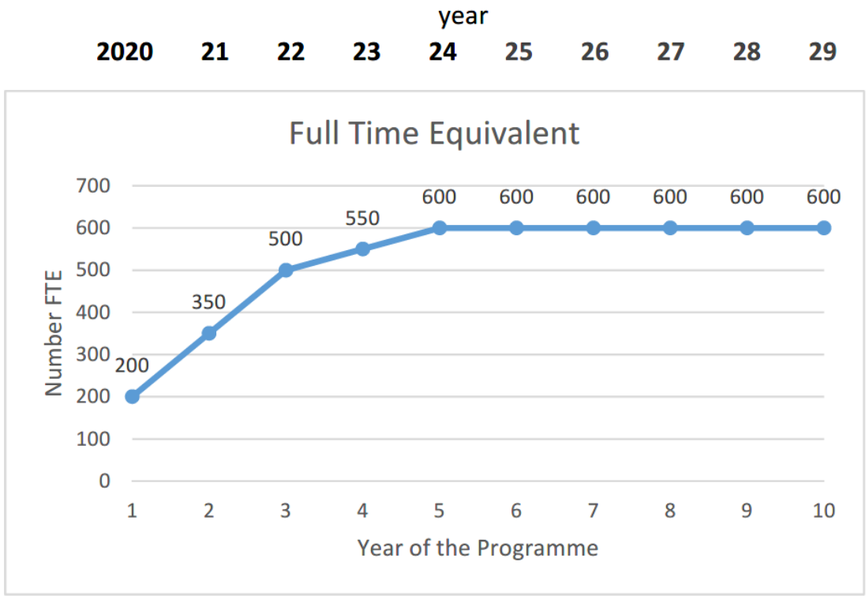
ErUM cost estimates

Full Time Equivalents

		MEuro/y /position in 2020
1. Workflows to exploit infrastructures	**100**	0.072
2. Management of research data	**100**	0.072
3. Big Data Analytics in physics research	**200**	0.072
4. Scientist's web working environment	**100**	0.072
5. Tenure track ErUM programme + 1 RA*	**100**	0.158
Total FTE	**600**	

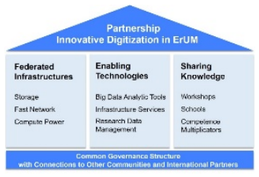
*RA=Research Associate

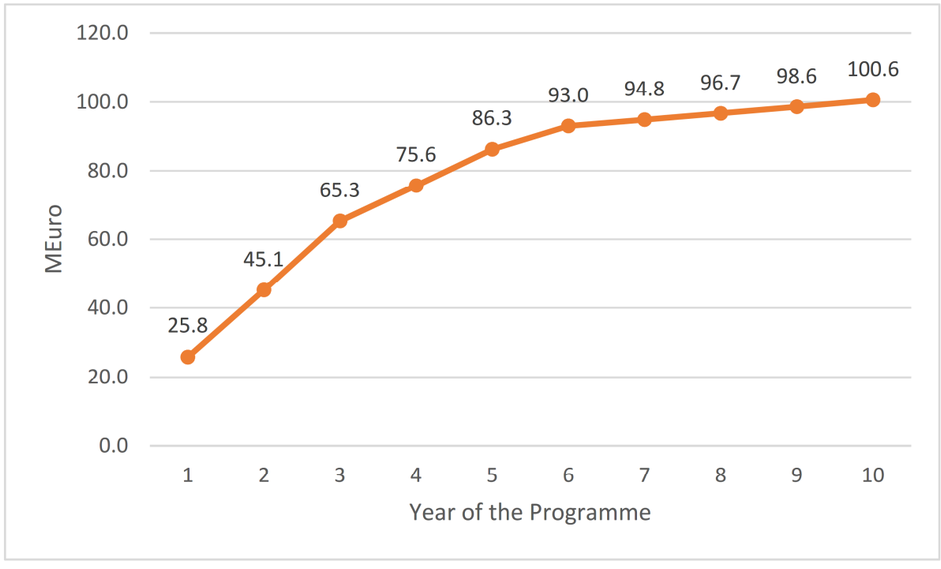
Due to the long-term nature of the responsibilities, these positions should ideally have long-term perspectives.



Cost estimate of recommended measures /MEuro

	year 2020	21	22	23	24	25	26	27	28	29	Meuro /topic over 10y
Full Time Equivalents	17.8	32.1	47.3	52.6	58.3	60.0	61.8	63.7	65.6	67.6	526.9
Large-scale federated infrastructures	5.0	10.0	15.0	20.0	25.0	30.0	30.0	30.0	30.0	30.0	225.0
Partnership for innovative digitization	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	30.0
Total Cost Estimate	**25.8**	**45.1**	**65.3**	**75.6**	**86.3**	**93.0**	**94.8**	**96.7**	**98.6**	**100.6**	**781.9**

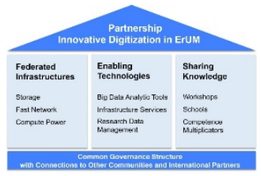




BMBF „Aktionsplan“ ErUM-Data

Expected to be announced first half year of 2020

O(10) years



1st call for proposals

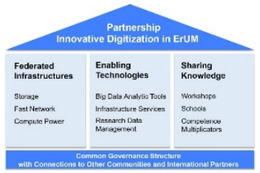
2nd call for proposals

3rd call for proposals

...

Funded projects

...



DIGUM: Digital transformation in ErUM **Guidelines**

- KFS
- RDS
- KHuK
- KET
- KFN
- KAT
- KfB
- KFSI

DIGUM: Digital transformation in the research on universe and matter

Guidelines

DIGUM is the bottom-up consortium of ErUM working groups located at universities and research centres. The task of the consortium is the joint implementation of the objectives stated in the white paper "Challenges and Opportunities of Digital Transformation in Fundamental Research on Universe and Matter - Recommendations of the ErUM Committees" [1].

A particular challenge for this consortium of over 8,000 postdoctoral researchers is the heterogeneity of the working groups from the different areas of ErUM. This concerns first the size of the experiments, as well as the amount and type of data, second the number of actively participating scientists and their staff, third methods in the areas of data management, algorithms, computing necessary for the success of the experiment and fourth the level of knowledge and experience with these modern procedures. Under these overall circumstances, substantial improvements and acceleration of ErUM basic research through digital transformation require a suitably positioned organization that ensures national integration of developments and international connections.

DIGUM has an organizational structure (spokesperson and boards), as well as an office with staff supporting the ErUM working groups. The DIGUM Overview Board is formed by the elected chairmen of the committees and the BMBF. The Digitization Board acts as the steering committee, with representatives from the 8 ErUM communities with expertise in the field of modern digitization. The organisational structure DIGUM is reviewed by the International Advisory Board. The legal form of DIGUM is derived from the formation of consortia (research consortiums) which is common practice in project funding.

The foundation and driving force behind the joint work is the continuously evolving vision that modern digitization will substantially accelerate progress in ErUM basic research. Digitisation is a means to an end.

In all decisions, efforts to reach a consensus are paramount. If, in exceptional cases, a consensus decision is not possible, the responsible body will decide by simple majority.

The DIGUM office will be established in coordination with the BMBF at a German research institute within the framework of ErUM-Pro (collaborative research).

The numerous ErUM working groups join together in interest groups on specific topics of modern digitisation (Topic Boards). According to document [1], the topics are "Federated Infrastructures", "Big Data Analytics", "Research Data", "User Interface" and "Knowledge Distribution". The structure of the interest groups can be divided up or expanded according to current requirements.

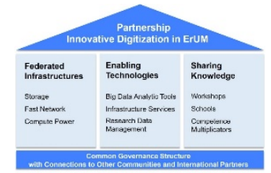
Organization DIGUM

Coordination	**Overview Board (OB)** 8 Committee Chairs, 1 Resource Provider, 1 Representative of the BMBF, 1 Representative of DESY-PT		
	Speaker / Co-Speaker	**Digitization Board (DB)** Speaker, Co-speaker, 8 Experts from committees, 1 Resource Provider, 5 Topic Coordinators	**Resource Provider Board (RB)** 10 Resource Providers, 8 Experts from committees
	Administrative Office (AO) Backbone coordination, includes 1 Administration coordinator & Team	**Annual Conference** of the ErUM-Data Working Groups	**International Advisory Board (IAB)** ca. 5 from Science, Industry

Topic Boards	**Topic Federated Infrastructures** Board: Coordinators, Experts Compute power Utilization Workflows …	**Topic Big Data Analytics** Board: Coordinators, Experts Algorithms Autonomization Control & preservation …	**Topic Research Data** Board: Coordinators, Experts Data models Management Curation …	**Topic User Interface** Board: Coordinators, Experts Scientists questions Developers work User support …	**Topic Knowledge distribution** Board: Coordinators, Experts Tenure track programme Workshop, schools …

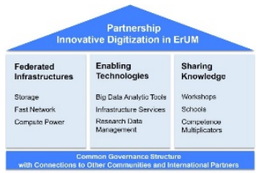
DIGUM: Digitization Board

Committee		Representative	Deputy
Forschung mit Synchrotronstrahlung	KFS	Christian Gutt	Bridget Murphy
Rat Deutscher Sternwarten	RDS	Joachim Wambsganß	Michael Kramer
Hadronen- und Kernphysik	KHuK	Kilian Schwarz	Tobias Stockmanns
Elementarteilchenphysik	KET	Markus Schumacher	Christian Zeitnitz
Forschung mit Neutronen	KFN	Klaudia Hradil	Astrid Schneidewind
Astroteilchenphysik	KAT	Andreas Haungs	Uli Katz
Beschleunigerphysik	KfB	Erik Bründermann	Oliver Boine-Frankenheim
Forschung mit nuklearen Sonden & Ionenstrahlen	KFSI	Patrick Reichart	
Projektträger DESY	PTDESY	Wolfgang Ehrenfeld	
Organisation		Martin Erdmann	
Experten	NFDI	Ralf-Jürgen Dettmar	
	Ressource Providers	Volker Gülzow	Thorsten Kollegger



Sub-Committee:
Editorial Board
To prepare application DIGUM

Erik Bründermann
Martin Erdmann
Christian Gutt
Andreas Haungs
Bridget Murphy
Markus Schumacher
Kilian Schwarz



Prepare application financial support of DIGUM

Wolfgang Ehrenfeld 6.4.20

Liebe Vorsitzende der ErUM-Komitees,
Liebe Mitglieder des Digitization Boards,

auf dem Prisma-Trialog ErUM-Data vom 02.5.2019 hatte das Referat 711 in Aussicht gestellt, dass wichtige Maßnahmen im Bereich der Digitalisierung in der Erforschung von Universum und Materie (ErUM) zur Vernetzung und Koordinierung der relevanten Fachcommunities zeitnah nach Veröffentlichung des Aktionsplans ErUM-Data ermöglicht werden sollen.

…

Aus Sicht des Referats 711 sollte der ErUM-Data-Hub folgende Aktivitäten umfassen:

- Vernetzung mit den relevanten Akteuren innerhalb und außerhalb ErUM:
  - ErUM: Materie, Teilchen, Universum
  - Informatik, Mathematik, Data Science
  - relevante BMBF-Kompetenzzentren
  - Wirtschaftsunternehmen
- Aus- und Weiterbildung (Koordination und Durchführung von Nachwuchsqualifizierung und Qualifizierungsmaßnahmen für Fachkräfte)
- Professionalisierter und effizienter Transfer in die relevanten Data Science Bereiche, in die Wirtschaft und in die Gesellschaft; dies kann explizit durch Kontaktstellen umgesetzt werden
- neue Anwendungsfelder und Partner erschließen
  - z. B. in den Bereichen Energie, Klima, Nachhaltigkeit

…

Wir fordern Sie nun auf, ein entsprechendes Konzept im Sinne der oben skizzierten Aktivitäten und Begleitmaßnahmen vorzubereiten. Bitte gehen Sie bei der Ausgestaltung des Konzepts von einer Laufzeit der Arbeiten von 4 Jahren aus und berücksichtigen Sie eine realistische Aufbauphase zu Beginn der Laufzeit.

Zeroth draft @discussion with Wolfgang Ehrenfeld

Inhaltsverzeichnis

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Geschäftsstelle

Thomas Schörner-Sardenius und viele andere Kolleg_innen

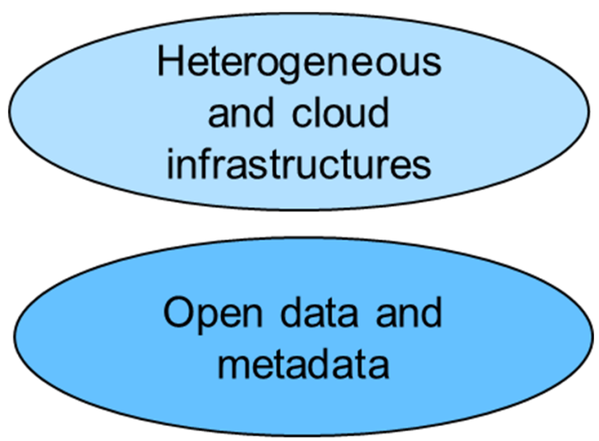
The PAHN-PaN Consortium

- For „National Forschungsdaten-Infrastruktur“

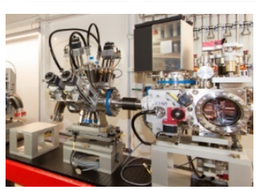
Die nationale Forschungsdateninfrastruktur (NFDI) soll die Datenbestände von Wissenschaft und Forschung systematisch erschließen, nachhaltig sichern und zugänglich machen sowie (inter-)national vernetzen. Sie wird in einem aus der Wissenschaft getriebenen Prozess als vernetzte Struktur eigeninitiativ agierender Konsortien aufgebaut werden.

Summary of the proposal [English]

The PAHN-PaN communities have always been at the forefront of technological developments. Today, due to the development of new accelerators, new observatories and experiments, and new detectors with increased resolutions and higher event rates, our physics is experiencing a rapid increase of data rates and volumes and also a more diverse access sharing. This boost of data leads to ever increasing demands on data analysis power and methods, and on data management capabilities. The goal of the PAHN-PaN Consortium is to develop solutions for the data challenges and to help setting up the structures necessary for this endeavour. These structures will facilitate the exploitation of synergies within the consortium, easy transfer of knowledge and technology to and from neighbouring consortia and communities, and the establishing of relevant services for PAHN-PaN and the entire NFDI. These goals are pursued in dedicated task areas and cross-cutting topics:





Summary

- ErUM-Data is continuously advanced by BMBF & us
- NFDI 1st round decision making
- Keep thinking positive: in the long run will all be successful efforts