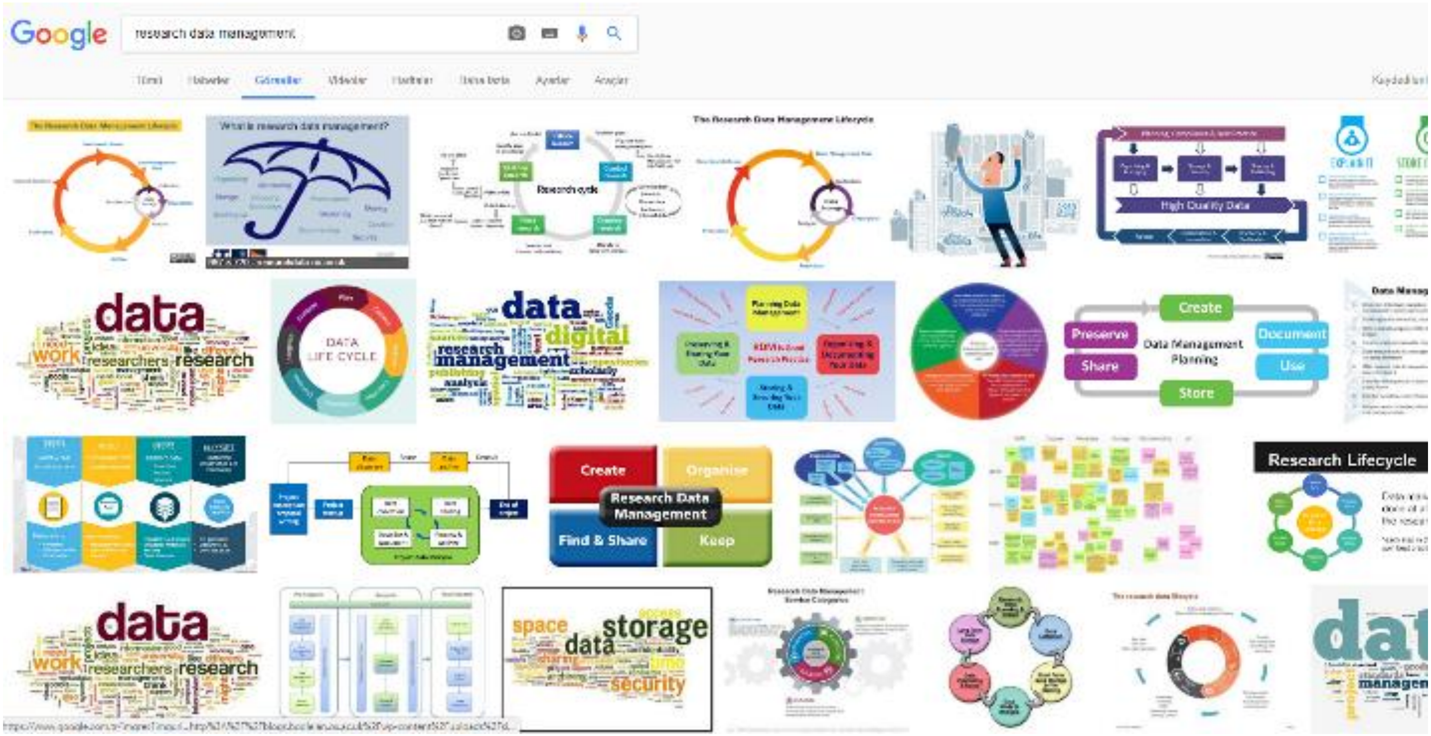
Veri Yönetiminde Başarıya Ulaşmak: Teknik Konular

Dr. Zehra Taşkın

Plan

- Araştırma verisi nedir?
- Her yönüyle «araştırma verileri»
  - Güvenilir araştırma verisi
  - Paylaşılabilir araştırma verisi
  - Saklanabilir araştırma verisi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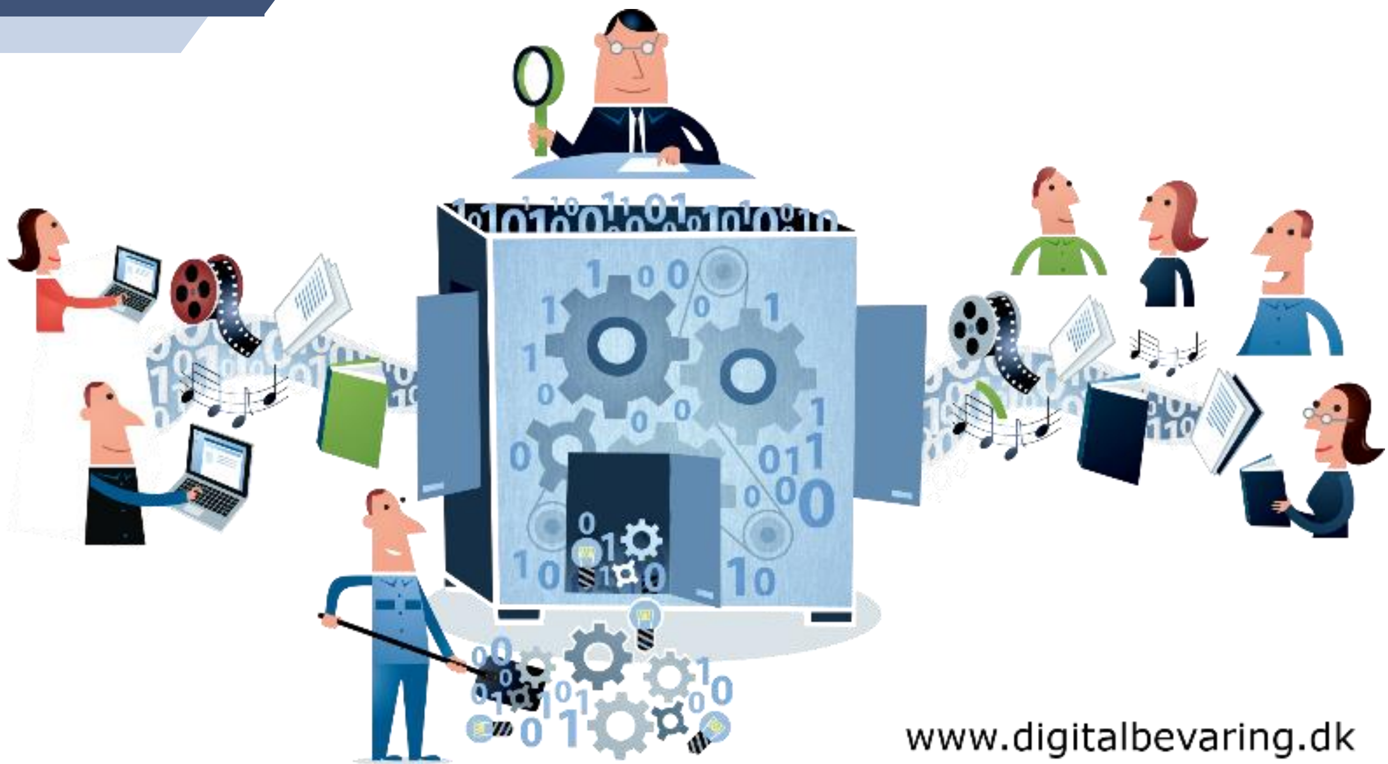

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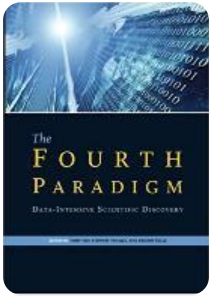
“Tüm bilim literatürünün ve bilimin tüm verisinin internet üzerinden erişilebilir olduğu; birbirleri ile konuşabildiği bir ortam

(Hey ve Diğerleri, 2009)



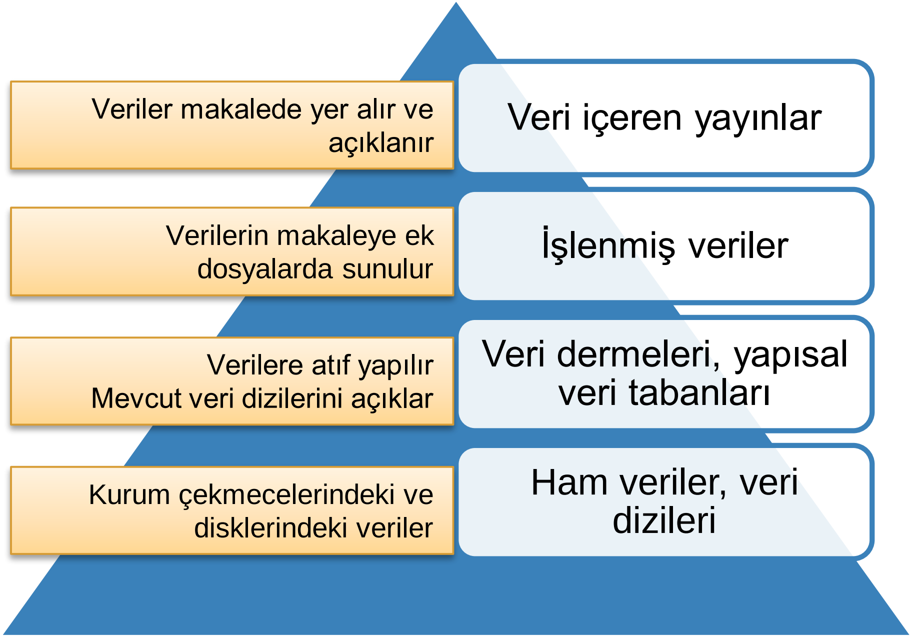
"Bilimsel çalışmalarda birincil kaynak olan ve araştırma sonuçlarını doğrulamak için kullanılan sayısal çıktılar, metinsel kayıtlar, görseller ya da sesler gibi maddi kayıtlar

«Lab notları, ilk analizler, makale taslakları, araştırma planları, hakem değerlendirmeleri, kişisel yazışmalar veya fiziksel nesneler (ör., lab numuneleri, test hayvanları) bu tanımın dışında»

(OECD, 2007)

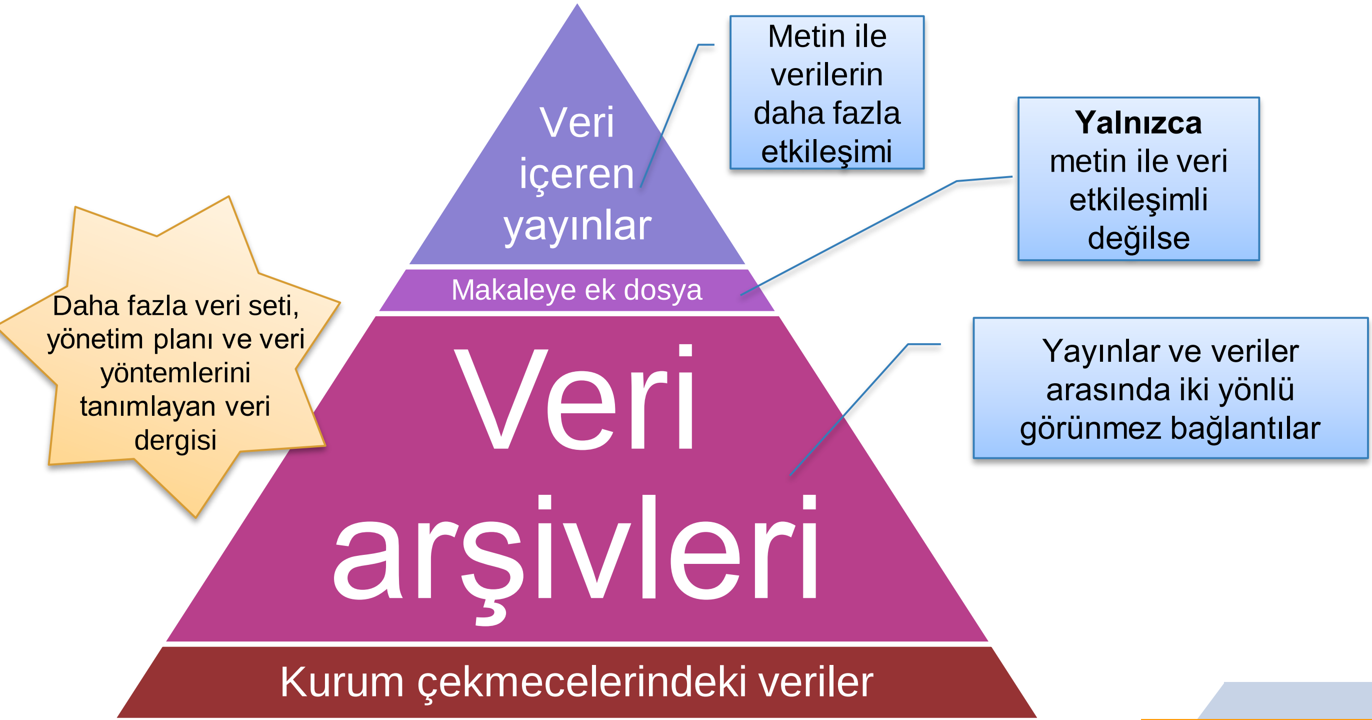
Erişilebilir?

Veri Yayın Piramidi



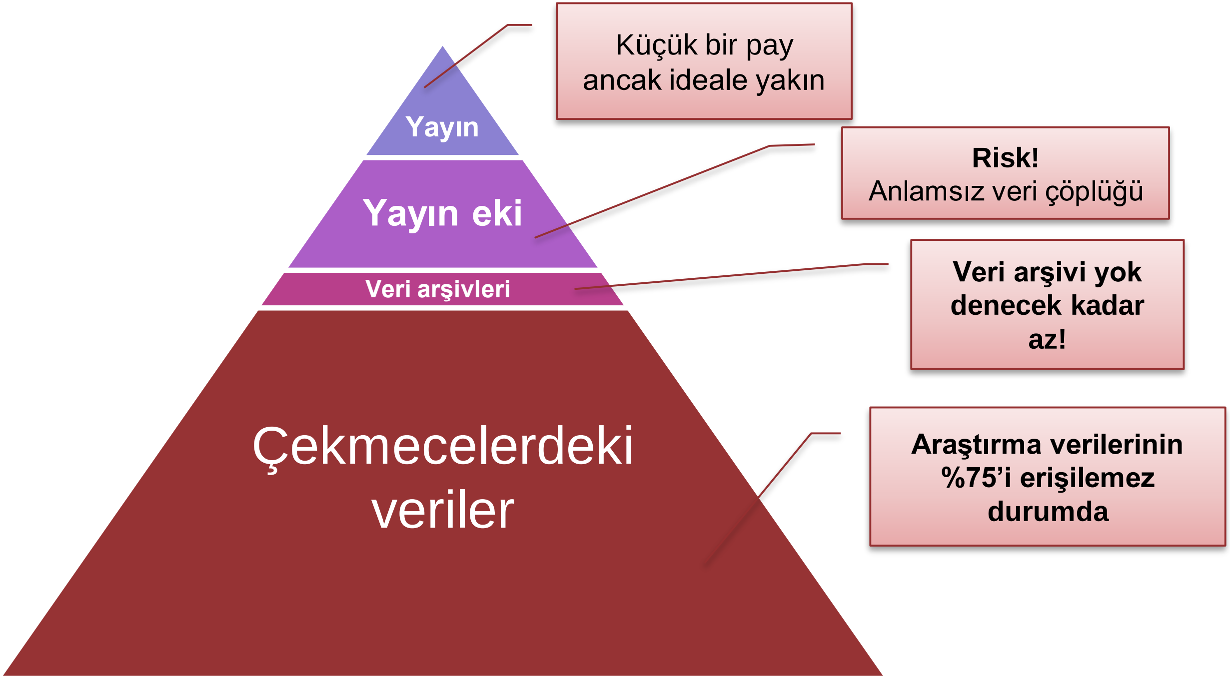
(LIBER Europe, 2012; çeviri: Tonta, 2014)

Veri Yayın Piramidi – İdeal Piramit



(LIBER Europe, 2012)

Veri Yayın Piramidi – Gerçekler



(LIBER Europe, 2012)

Verilerinizi paylaşır mısınız?

Ya verilerimi çalarlarsa?

Doğruluğu kanıtlanmamış veriyi paylaşmak ya birine zarar verirse?

Ya benden önce başkası benim verimle yayın yaparsa?

Benim verimi kim ne yapsın?

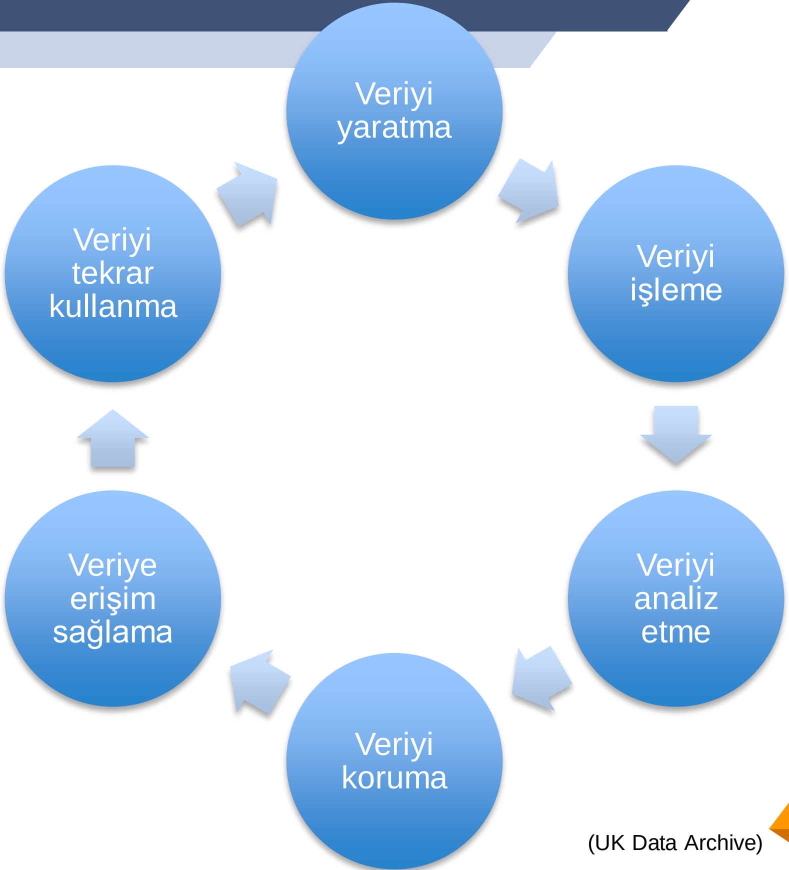
…

“ *Düzenli bir bilimsel yapı ile farklı alanlar aynı veri üzerinde birlikte çalışarak yeni bakış açıları geliştirebilir. Araştırmacılar verilerini tüm dünya ile verilerin bütünlüğünü veya sahipliğini kaybetmeden paylaşabilir. Verileri tekrar tekrar kullanabilir, birleştirebilir veya verimliliği artırabilir. Günümüz problemlerini çözmenin en kolay yolu bu…*

(High Level Expert Group on Scientific Data, 2010)

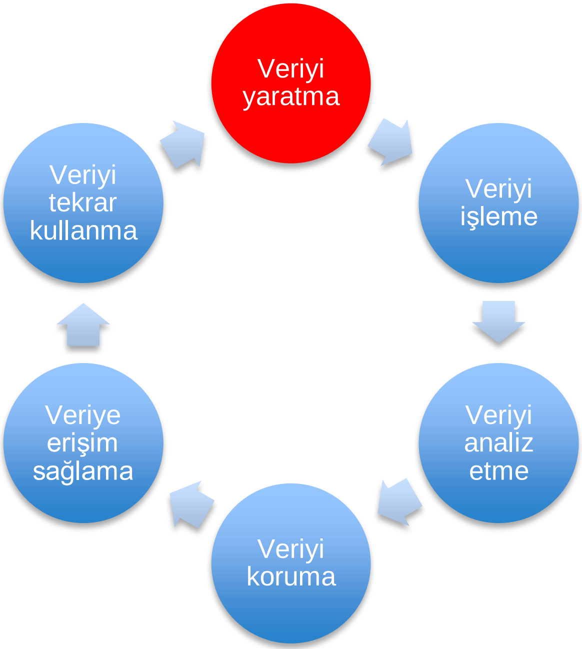
Nasıl?

Veri Yönetimi Döngüsü



(UK Data Archive)

Veriyi Yaratma



- Araştırmayı tasarla
- Veri yönetimini planla (biçim, saklama vb.)
- Verinin paylaşım izinlerini planla
- Mevcut verileri bul
- Veri topla (deney, gözlem, ölçüm, simülasyon vb.)

Veriyi Yarat: Araştırma Tasarımı

- Neyin, nasıl, hangi yöntemle araştırılacağının tasarlanması
- Araştırma için en iyi yol, yöntem ne?

Veriyi Yarat: Veri Yönetimini Planla

- Araştırmada kullanılacak veri hangi formatta saklanacak?
- Nerede saklanacak?
- «Yeni bir ayakkabı almadan önce ayakkabılıkta yer açmak»

Veriyi Yarat: Veri Paylaşım İzinlerini Planla

- Verinin sahibi kimler olacak?
- Veriye kimler erişebilecek?

Veriyi Yarat: Mevcut Verileri Bul

- Daha önce ilgili veri toplanmış olabilir mi?
- Mevcut veriler nereden bulunabilir?

Veriyi Yarat: Mevcut Verileri Bul

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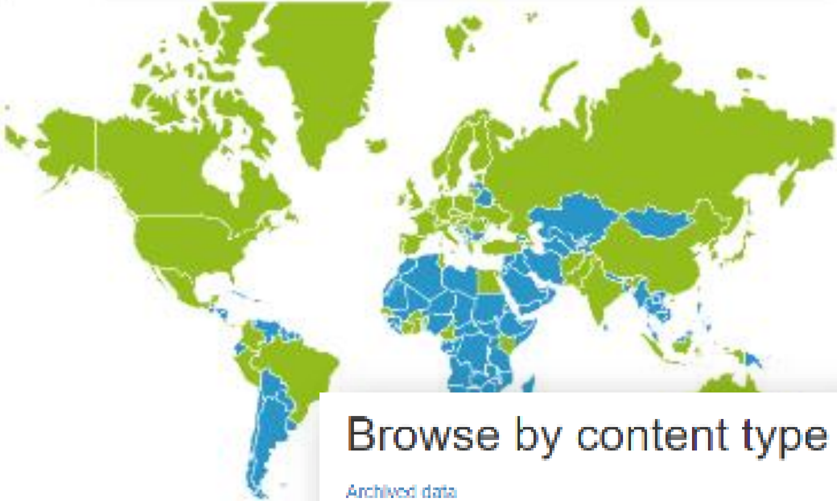

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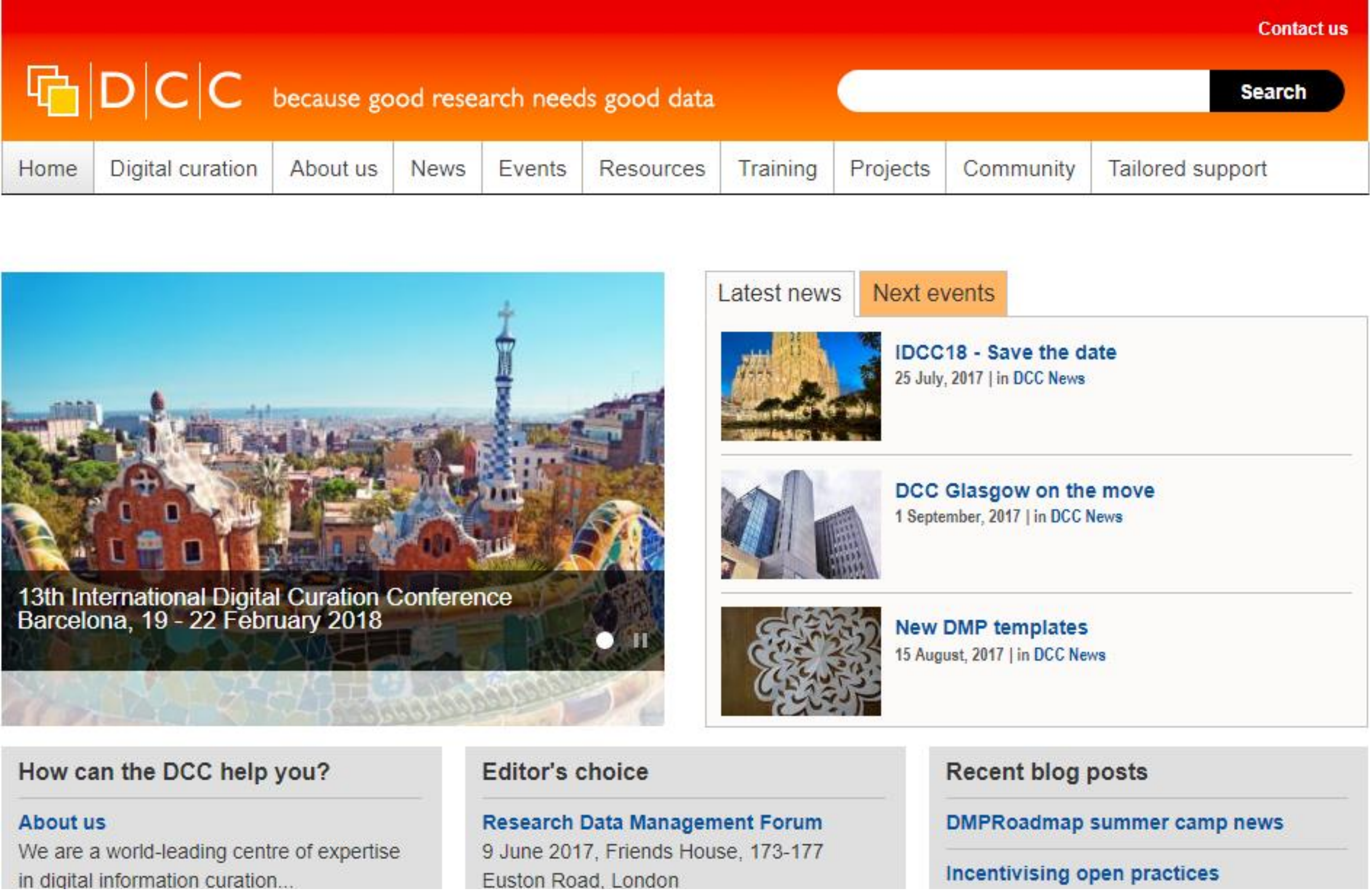
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Aligned ISNI and Ringgold identifiers for institutions

Delpeuch, Antonin

This dataset provides a correspondence between ISNI and Ringgold identifiers, by combining two datasets: Open ISNI for Institutions, available at http://isni.ringgold.com/ , which provides metadata for institutions identified by ISNI. The dataset of institutions used by ORCID for disambiguation,...

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Supplementary Data: Status of the scalar singlet dark matter model (arXiv:1705.07931)

The GAMBIT Collaboration

Supplementary Data Status of the scalar singlet dark matter model arXiv:1705.07931 The files in this record contain data for the scalar singlet dark matter model considered in the GAMBIT "Round 1" scalar singlet paper. The files consist of Three YAML files, each corresponding to a different...

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Supplementary Data: Status of the scalar singlet dark matter model (arXiv:1705.07931)

The GAMBIT Collaboration

Supplementary Data

Status of the scalar singlet dark matter model
arXiv:1705.07931

The files in this record contain data for the scalar singlet dark matter model considered in the GAMBIT "Round 1" scalar singlet paper.

The files consist of

- Three YAML files, each corresponding to a different parameter range
- StandardModel_SLHA2_SingletDM_scan_15.yaml, a universal YAML fragment included from the other three YAML files
- Three hdf5 files. SingletDM.hdf5 contains the combined results of all sampling runs, and is the basis for the profile likelihood plots in the paper. SingletDM_TW_full.hdf5 and SingletDM_TW_lowmass.hdf5 contain the results from T-Walk scans over the full and low-mass parameter ranges, respectively. These are the bases for the marginalised posterior plots in the paper.
- An example pip file corresponding to each hdf5 file, for producing plots using pippi
- A tarball best_fits_yaml.tar.gz containing YAML files of the best-fit point in each subregion of the fit.

The YAML files corresponding to different parameter ranges follow the naming scheme SingletDM_[slice].yaml, where slice may be full, lowmass or neck. Each of these YAML files contains entries in the Scanners node for running Diver, MultiNest, TWalk and GreAT.

A few caveats to keep in mind:

1. The YAML files that we give here are updated compared to the ones that we used when generating the hdf5 file, in order to match the set of available options in the release version of GAMBIT 1.0.0. The included physics and numerics are however identical.
2. The YAML files are designed to work with the tagged release of GAMBIT 1.0.0, and the pip file is tested with pippi 2.0, commit 2ab061a8. They may or may not work with later versions of either software (but you can of course always obtain the version that they do work with via the git history).
3. The pip file is an example only. Users wishing to reproduce the more advanced plots in any of the GAMBIT papers should contact us for tips or scripts, or experiment for themselves. Many of these scripts are in multiple parts and require undocumented manual interventions and steps in order to implement various plot-specific customisations, so please don't expect the same level of polish as for files provided here or in the GAMBIT repo.

Publication date:
August 22, 2017

DOI:
DOI 10.5281/zenodo.846860

Keyword(s):
dark matter | beyond standard model | global fits | particle physics phenomenology | Higgs physics

Related identifiers:
Supplement to:
arXiv:1705.07931

Communities:
GAMBIT (Collaboration)
INSPIRE HEP
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Versions

Version 2	10.5281/zenodo.846860	Aug 22, 2017
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v2 adds YAML benchmark files for the best-fit points in each region of the model.

Preview

The files in this record contain data for the scalar singlet dark matter model considered in the GAMBIT "Round 1" scalar singlet paper.

The files consist of

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- `StandardModel_SLHA2_SingletDM_scan_15.yaml`, a universal YAML fragment included from the other three YAML files
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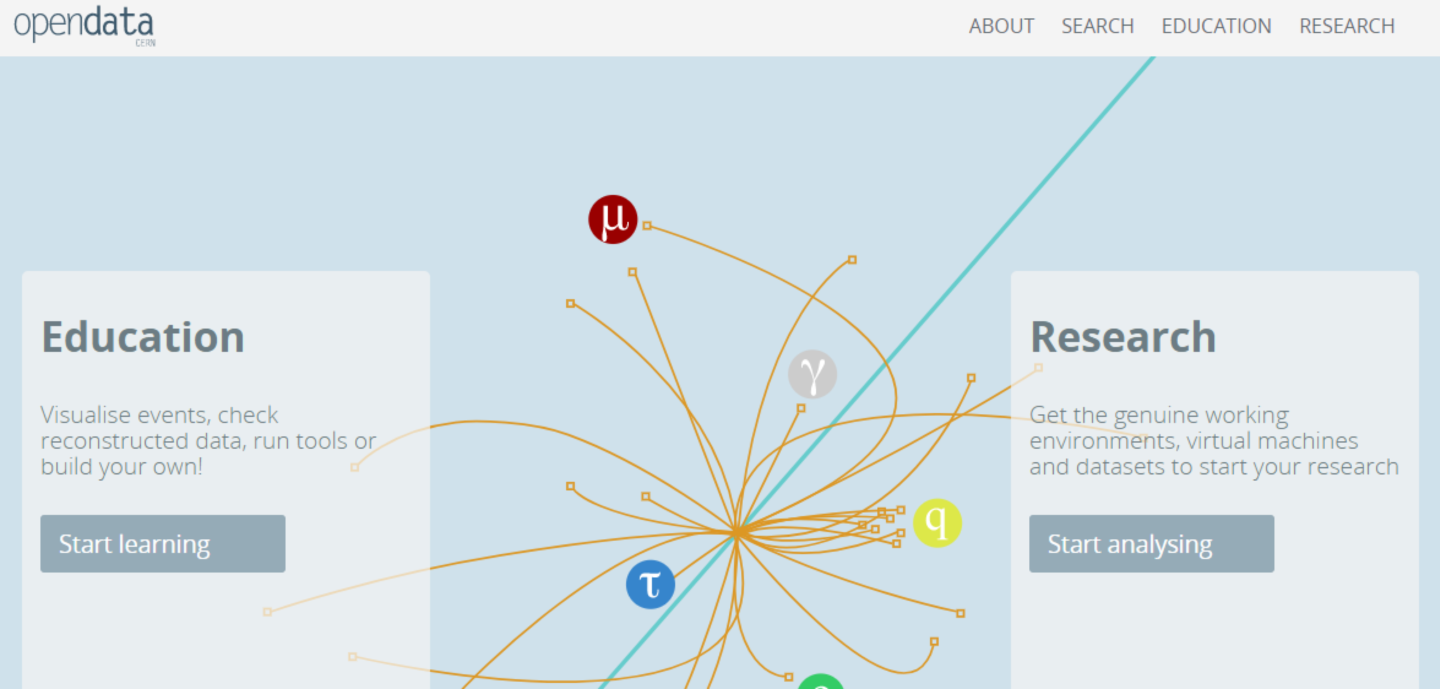
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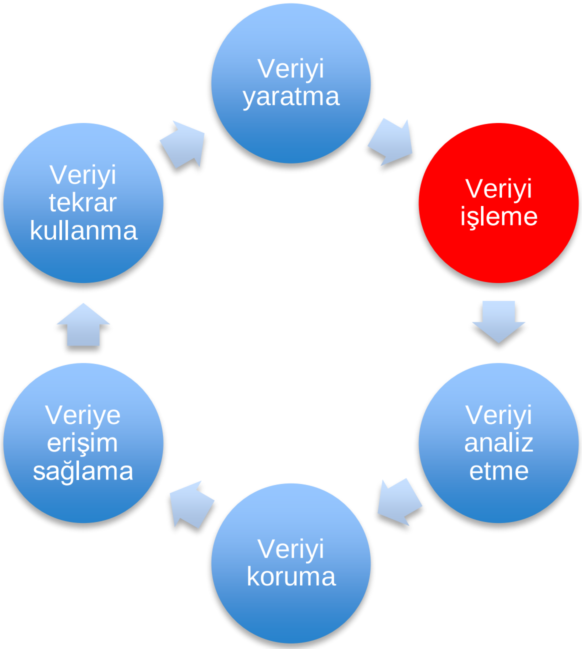
Veriyi Yarat: Veri Topla

- Hangi veri toplama yöntemlerini kullanacağına karar ver!
- Deney, gözlem, anket, ölçüm vb.

Veriyi işleme



- Veriyi elde et, dijitalleştir, çevir
- Kontrol et, doğrula, temizle
- Verinin anonimleştirilmesi gerekiyorsa anonimleştir
- Veriyi tanımla
- Veriyi yönet ve sakla

Veriyi İşleme: Elde Et, Kodla, Dijitalleştir, Çevir

- En doğru veriyi, en doğru yöntemle ve en doğru formatla elde et

En Yaygın Veri Formatları

Veri türü	**Tercih edilen dosya formatı**
Kapsamlı niceliksel veriler	SPSS, R, Phyton, SAS, MS Access
Kapsamlı olmayan niceliksel veriler	.csv, .tab, .xls, .txt, .dbf
Niteliksel veriler	XML, .rtf, Unicode txt, Latex
Coğrafik veriler	ESRI, .dwg, .tif, .tfw, .mdb
Dijital görsel veriler	.tif, .jpeg, .png
Dijital ses verileri	.flac, .mpeg, .mp3, .wav
Dijital video verileri	.mp4, jp2, mj2
Diğer	.html, .odt, .doc, .pdf

Gelecekte Tercih Edilecek Veri Formatlarının Özellikleri

- Birine (kişi/kurum) ait olmayan,
- Açık ve belgelenmiş standarda sahip,
- Araştırma topluluğu tarafından ortak kullanılabilen,
- Standart karakter kodlamalarını kullanan,
- Sıkıştırılmamış

http://guides.library.oregonstate.edu/research-data-services/data-management-types-formats

Türkiye Akademisyenlerinin Veri Tipi ve Formatı Tercihi

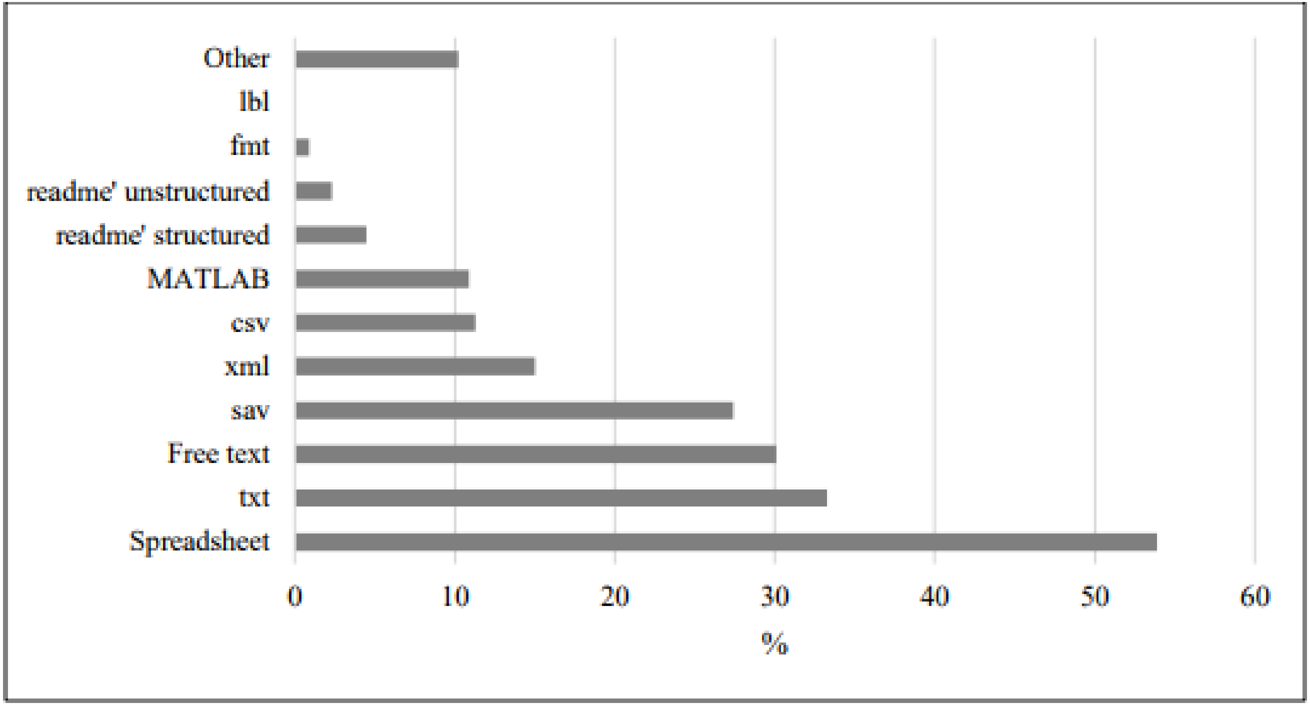


Figure 3. Research data formats.

Veriyi İşleme: Kontrol Et, Düzenle, Doğrula, Temizle

- Veriyi organize et!
- Dosya hiyerarşisinden dosya adlarına kontrol
- Nasıl bir araştırma aktivitesi sonrası nasıl bir veri toplandı?
- Versiyon bilgileri
- Sistematik kodlama
- Zaman damgası

Veriyi İşleme: Gerekiyorsa Veriyi Anonimleştir

DATA + FOLLOW THIS TOPIC

Why you can't really anonymize your data

It's time to accept and work within the limits of data anonymization.

By Pete Warden, May 17, 2011

One of the joys of the last few years has been the flood of real-world datasets being released by all sorts of organizations. These usually involve some record of individuals' activities, so to assuage privacy fears, the distributors will claim that any personally-identifying information (PII) has been stripped. The idea is that this makes it impossible to match any record with the person it's recording.

Something that my friend Arvind Narayanan has taught me, both with theoretical papers and repeated practical demonstrations, is that this anonymization process is an illusion. Precisely because there are now so many different public datasets to cross-reference, any set of records with a non-trivial amount of information on someone's actions has a good chance of matching identifiable public records. Arvind first demonstrated this when he and his fellow researcher took the "anonymous" dataset released as part of the first Netflix prize, and demonstrated how he could correlate the movie rentals listed with public IMDB reviews. That let them identify

Veriyi İşleme: Veriyi Tanımla

- Veri ne hakkında?
- Veri hakkında veri: Üst veri (metadata)
- Ne sağlar?
- Üst veri standartları

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ABOUT GEOSPATIAL

The basics of metadata

- Geospatial Metadata Fa...
- Business Case for Metad...
- Value of Metadata (pdf, p...
- What is Metadata (pdf, p...

ISO ... serv... the quality, the spatial and tem... portrayal, distribution, and oth...

ISO 19115-1:2014 is applicabl...

-the cataloguing of all types of r... of datasets and services;

-geographic services, geograph... features and feature properties

ISO 19115-1:2014 defines:

-mandatory and conditional me...

FGED
Functional Genomics Data Society

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MINSEQE

Minimum Information about a high-throughput SEQuencing Experiment

MINSEQE describes the **Minimum Information about a high-throughput nucleotide SEQuencing Experiment** that is needed to enable the unambiguous interpretation and facilitate reproduction of the results of the experiment. By analogy to the MIAME guidelines for microarray experiments, adherence to the MINSEQE guidelines will improve integration of multiple experiments across different modalities, thereby maximising the value of high-throughput research. [MINSEQE version 1.0 (pdf), FGED Society (June 2012)]

The five elements of experimental description considered essential when making data available supporting published high-throughput sequencing experiments are as follows:

1. **The description of the biological system, samples, and the experimental variables being studied.**
   - "compound" and "dose" in dose response experiments or "antibody" in ChIP-Seq experiments, the organism, tissue, and the treatment(s) applied.

... / Geospatial Metadata

...atial Metadata
...istry
...Standards
...m / Data.gov
...dations (pdf)
...eospatial Data
...A) Metadata
...(pdf)
...adata Working
...G)
...atial Metadata
...ation Forum

4

MIBBI - Minimum Information for Biological and Biomedical Investigations

A common portal to a group of nearly 40 checklists of Minimum Information for various biological disciplines. The MIBBI Foundry is developing a cross-analysis of these guidelines to create an intercompatible, extensible community of standards.

The concept was realized initially through the joint efforts of the Proteomics Standards Initiative, the Genomic Standards Consortium and the MGED RSBI Working Groups. The latest project to register with MIBBI is the MIABie guidelines for reporting biofilm research, as of January 2012.

Related Vocabularies	Ontology for Biomedical Investigations
Specification	http://mibbi.sourceforge.net/foundry.shtml
Standard's website	http://mibbi.sourceforge.net/portal.shtml

Extensions

MIBBI Portal
A list of nearly 40 Minimum Information standards projects registered with the MIBBI initiative.

Tools

ProteoRed Tools
Bioinformatics tools to create and extract metadata compliant with the MIBBI-registered MIAPE minimum requirements.

Use Cases

BioModels Database
A repository hosting computational models of biological systems, using the MIBBI-registered MIRIAM and MIASE minimal metadata requirements.

CARMEN
A a virtual laboratory for neurophysiology, enabling sharing and collaborative exploitation of data, analysis, code and expertise. Metadata must include the MIBBI-registered MINI recommendations.

FlowRepository
A database of flow cytometry experiments where you can query and download data collected and annotated according to the MIBBI-registered MIFlowCyt standard.

International Molecular Exchange Consortium
An international collaboration to provide access to a non-redundant set of protein-protein interaction data from a broad taxonomic range of organisms. IMEx partner databases require data to be MIMIx (a MIBBI-registered standard) compatible.

NEBC ISA Network BioInvestigationIndex
The NERC Environmental Bioinformatics Centre ISA Network's index of ISA-Tab and MIBBI-compliant environmental 'omics data.

PRIDE - PRoteomics IDEntifications database
A centralized, MIBBI standards compliant, public data repository for proteomics data, post-translational modifications and supporting spectral evidence.

Türkiye Akademisyenlerinin Üst Veri Standart Tercihi

- Katılımcıların %27'si üst verinin ne anlama geldiğini bilmiyor.
- Kendi geliştirdikleri üst veri standartlarını kullandıklarını söylüyorlar (%13).
- ISO %8,8, AWM, DwC, DIF, EML, NISO gibi diğer standartlar ise %1'in altında.

Veriyi İşleme: Veriyi Yönet ve Sakla

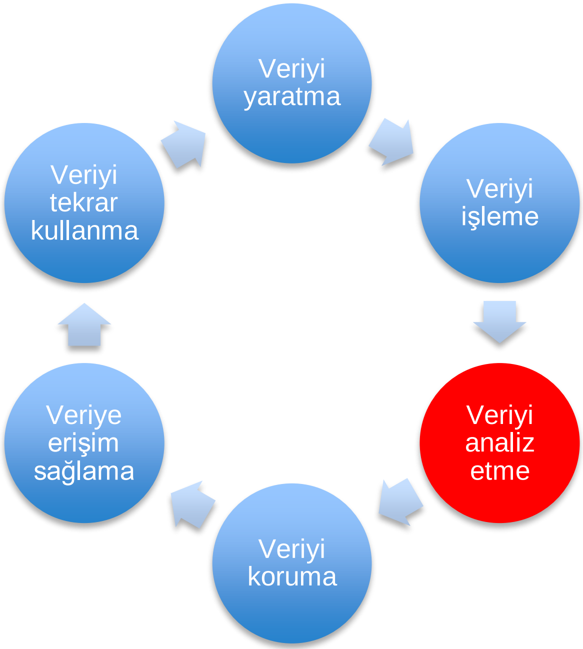
- Veriyi yedekleme ve koruma
- Şifreleme
- Güncelleme
- Güvenli internet protokolleri
- Sanal sunucuların güvenliği
- Uzaktan erişim

Türkiye Akademisyenlerinin Veri Saklama Tercihleri

Table III. Places to store data

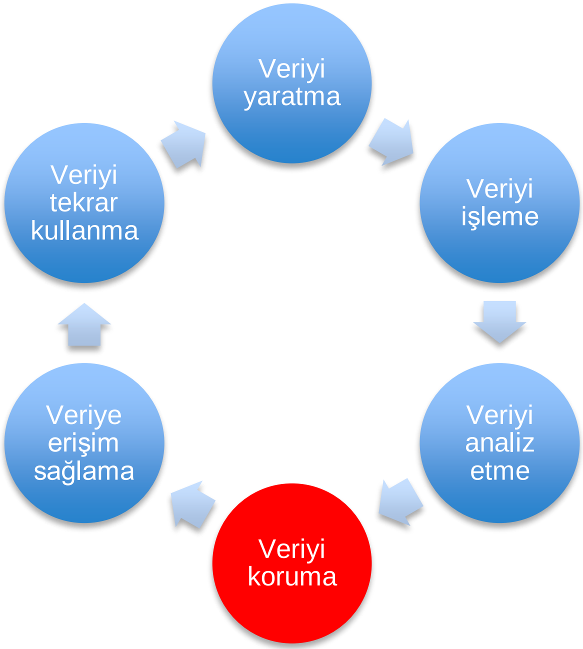
Medium	n	%
Local computers	381	71.6
Cloud	244	45.9
Open access data repository	44	8.3
Institutional open repository	17	3.2
Commercial data repository	2	0.4

Veriyi Analiz Etme



- Veriyi yorumla
- Araştırma çıktısı üret
- Yayın yap
- Veriyi koruma için hazırla

Veriyi Koruma



- Veriyi en iyi formata getir
- Veriyi en uygun ortama taşı
- Yedekle ve sakla
- Üst veriyi hazırla
- Veriyi arşivle
- Provenans

Veriyi Koruma: Provenans

Provenance Principles for Open Data

a)

Transport

Transport data covers the transport infrastructure and data about traffic flow. *Note: the data provided here dates from March 2010.*

Development

- National Public Transport Gazetteer
- National Public Transport Access Nodes

Search

- SPARQL Endpoint provided by Talis
- Search provided by Talis
- SPARQL Endpoint provided by TSO

Guides

- Guide to SPARQLing Transport Data

b)

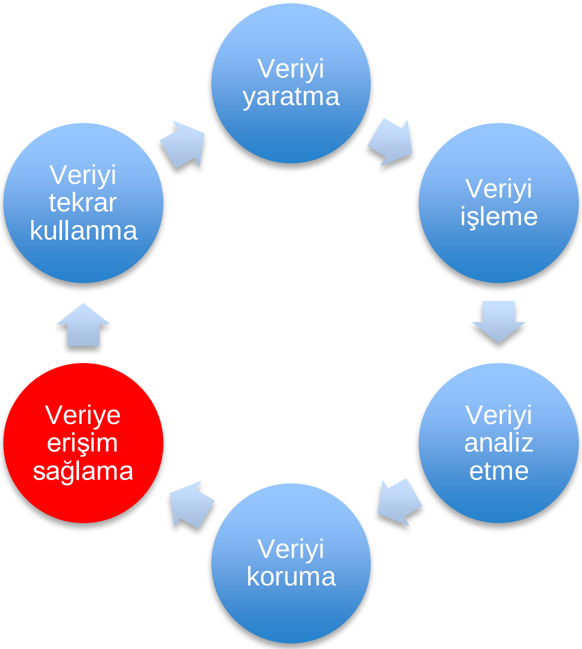

```
{  "name": "naptan",
   "author": "Transport Direct",
   "author_email": " naptandatamanager@landmark.co.uk",
   "maintainer": null, "maintainer_email": null,
   "extras": {
     "date_released": "2010-07-01",
     "date_updated": "2012-01-03",
     "temporal_coverage-from": "2011-04-01",
     "temporal_coverage-to": "2011-10-04",,
     "agency":"Transport Direct",
     "published_via":"Transport Direct [11663]",
     "published_by":"Department for Transport [11406]",
     "department":"Department for Transport",
     "import_source":"COSPREAD-cospread-2010-03-19-part1.csv",...}}
```


General Terms
Theory, Documentation, Management

Keywords
provenance, open data, linked data

The Provenance and Linked Open Data mini-theme[2] was an activity supported by the UK e-Science Institute[3] which was investigating provenance challenges in the context of Linked Open Data. As an outcome of a series of workshops organised under this activity we have identified and discussed a set of principles for publishing provenance of open data similar to the Linked Open Data rules discussed by Berners-Lee[1].

Erişim Sağlama



- Veriyi yay
- Veriyi paylaş
- Erişimi kontrol et
- Entelektüel mülkiyet haklarını al
- Veriyi duyur

Erişim Sağlama: Entelektüel Mülkiyet Hakları

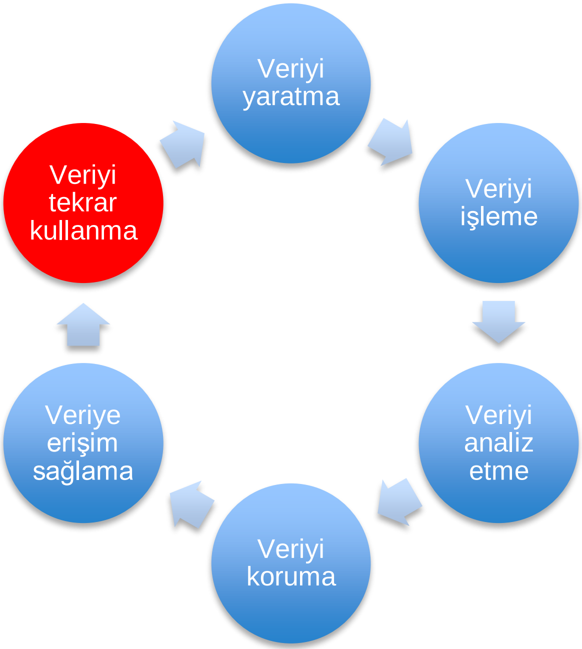
- Verinin telifi kime ait?
- Fonlayıcı veya üniversitelerin hakları
- Üçüncü parti telif sahipleri (sağlayıcı veya yayıncılar gibi)

- Sorumluluk paylaşımı

Erişim Sağlama: Lisanslama

- Creative Commons
- Open Data Commons
- Open Government License

Veriyi Tekrar Kullanma



- Yeni araştırmalar
- Bulguların değerlendirilmesi
- Öğretim ve öğrenme
- Deneyimlerin tekrar edilmesi

İYİ YÖNETİLEN ARAŞTIRMA VERİLERİ İÇİN YOL HARİTASI

(Waard, Cousijn ve Aalbersberg, 2015)

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