



دائرة الإحصاءات العامة  
Department of Statistics

## EU Twinning Project on Statistics in Jordan

### Quality management

#### 1.3.6: Quality and metadata

**Mission in Jordan 4<sup>th</sup> – 7<sup>th</sup> December 2023**

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# We will be talking about

- Quality in statistics
- The quality framework that we work within
- Quality management in Statistics Denmark
- Metadata management in Statistics Denmark



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DI STATIS  
Statistisches Bundesamt



Statistics Finland 

# Quality in statistics

- ISO, an international body for formulating standards, has defined quality as: “Degree to which a set of inherent characteristics fulfils requirements”.
- Quality in statistics is the set of properties the statistics needs to have to fulfil the users’ needs.
- Our starting point is the users and their needs.

**Fit for purpose**



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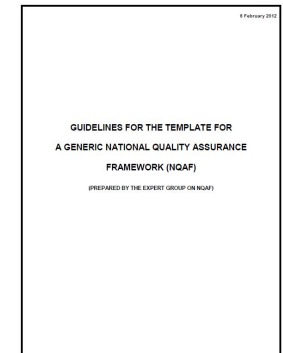
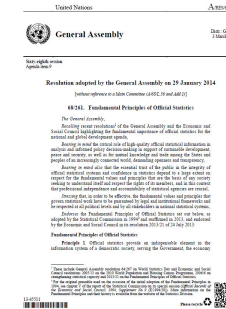
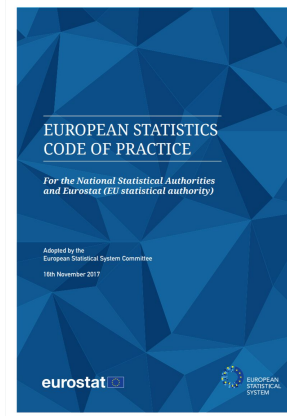


Statistics Finland

# Frameworks for quality

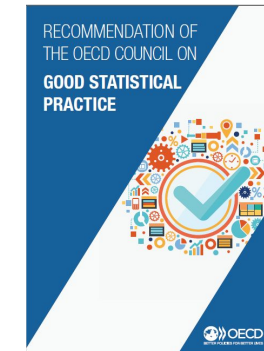
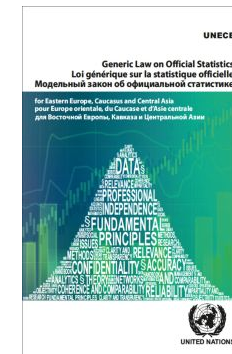
- EU

- ESS Code of Practice (CoP)
- Quality assurance framework



- Outside EU

- UNs Fundamental principles
- UNs Generic Statistical Law
- UNs NQAF (National Quality Assurance Framework)
- OECD: Good Statistical Practices



- ISO 9000
- EFQM Excellence model – Europeans Foundation for Quality Management



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# Quality management in SD

- European frame
  - ESS CoP and ESS QAF
  - Peer Reviews
- Local frame – Quality policy
  - Quality awareness in dissemination of statistics
    - Dissemination of press releases and other publications
    - Documentation of statistics, other metadata, user involvement
  - Quality awareness in production of statistics
    - EU-cooperation, guidance from the methods division, quality reviews
    - Extensive use of administrative registers
- In practice the management system builds on three pillars
  - Metadata (e.g. quality assurance of documentation of statistics (quality reports))
  - Quality (internal quality reviews)
  - Standardisation – process model (GSBPM)

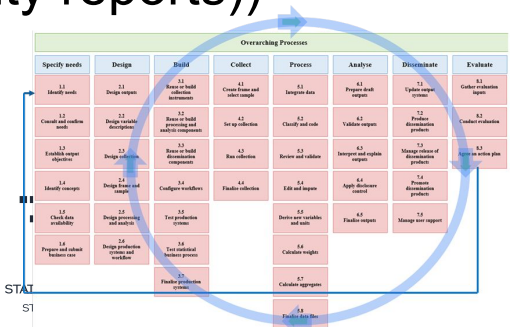


Statistical products



TABLE1  
TABLE2  
TABLE3

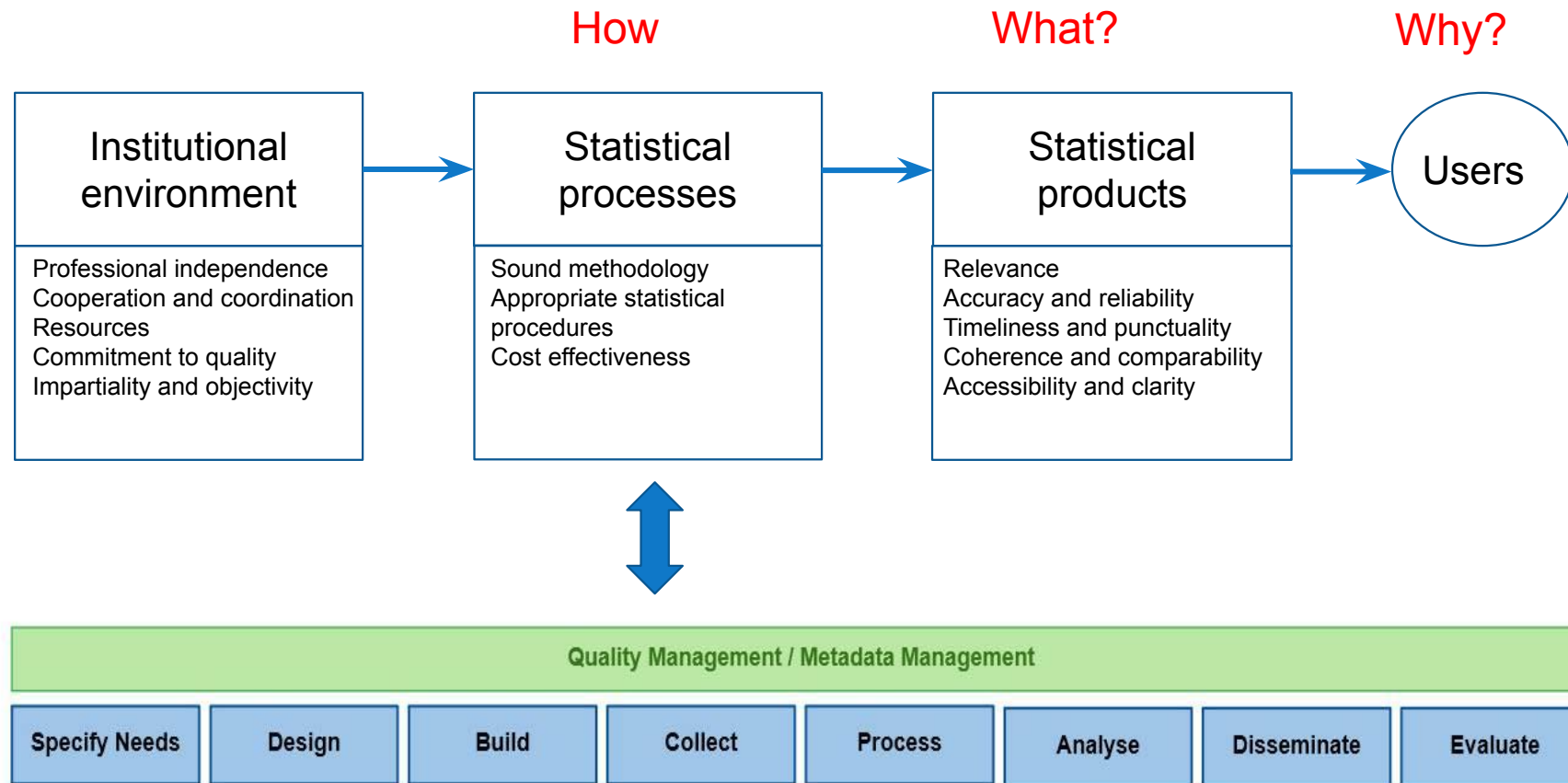
Documentation of statistics



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# European statistics – quality frame

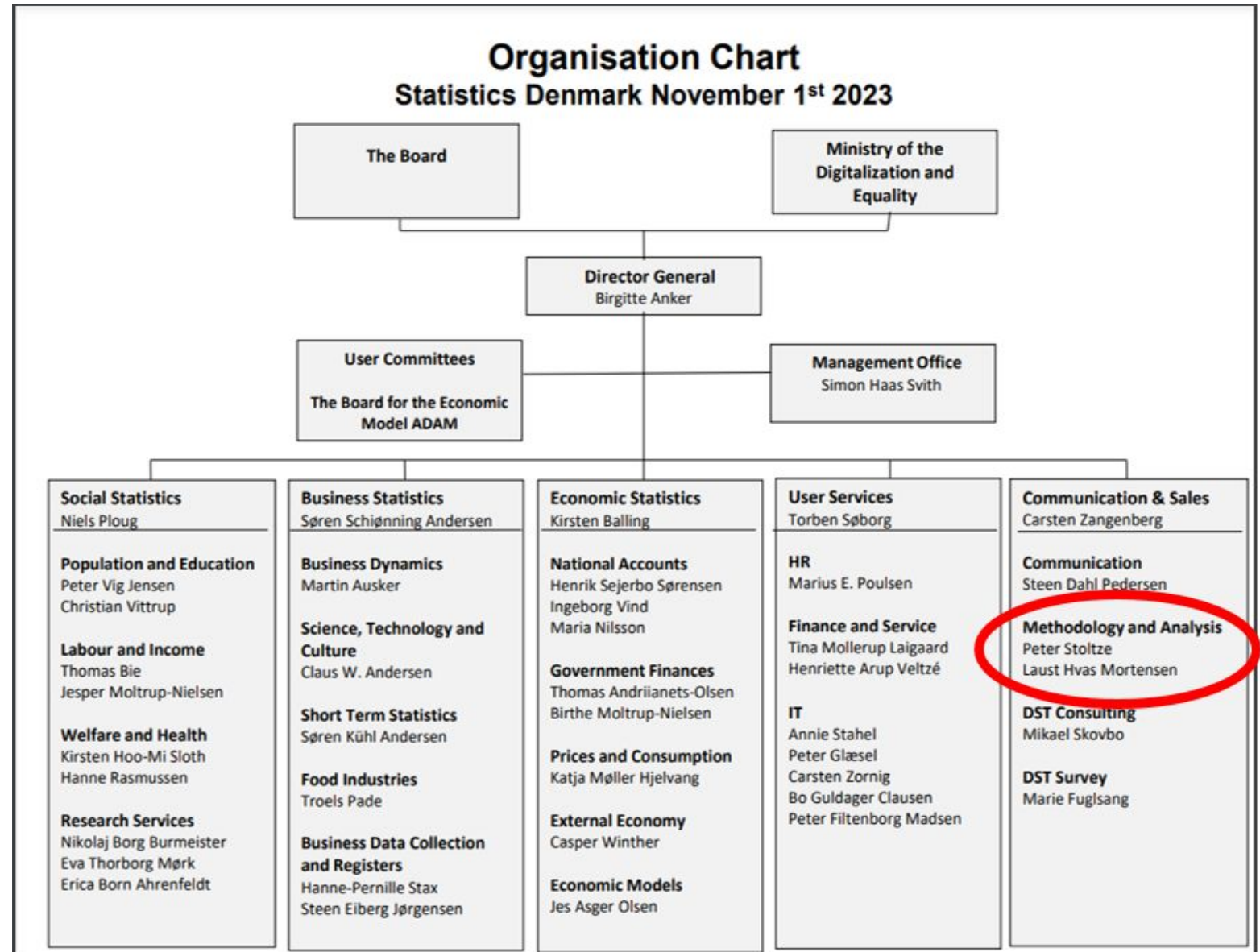


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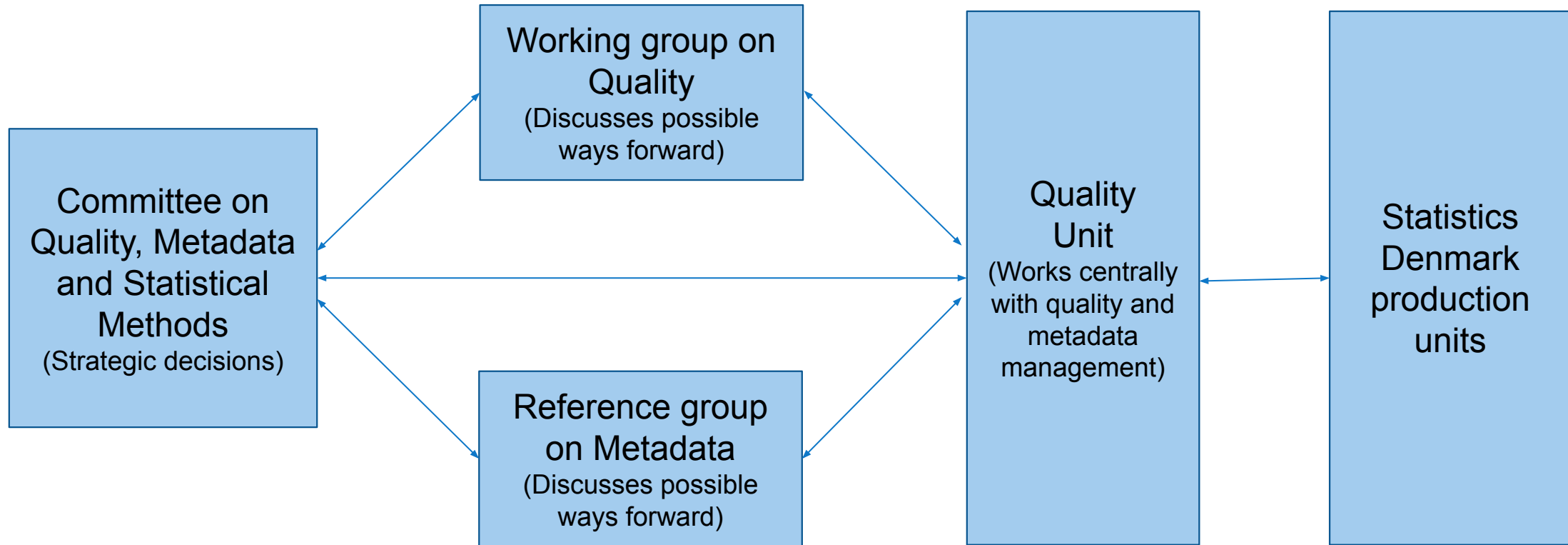
# Organisation I



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# Organisation II



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# Quality management in SD

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# Metadata vision



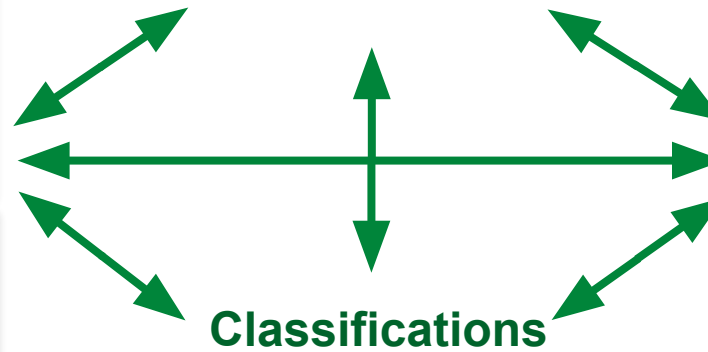
Documentation of statistics

Documentation of registers and variables

Concepts

**Personbil:** Car designed for carriage of a maximum of nine persons including the driver. Usually, a passenger car has white license plates, but can also be provided with yellow license plates. A passenger car can be driven by anyone with a valid B license.

**Varebil:** Car designed for carriage of goods and has a permissible total weight of no more than 3,500 kg. Is provided with yellow or partially yellow license plates. Can be driven by anyone with a common category B license.



Classifications

- W1: LANDE I ALT
- E1: EUROPA
- F1: AFRIKA
  - F4: Nordafrika
    - DZ: Algeriet
    - EG: Egypten
    - LY: Libyen
    - MA: Marokko
    - TN: Tunesien
  - F2: Andre afrikanske lande

ID	VAR_1	TYPE	AAR_FRA	AAR_TIL	...	LAND			
1	ID	VAR_1	TYPE	AAR_FRA	AAR_TIL	...	LAND		
2	1	ID	VAR_1	TYPE	AAR_FRA	AAR_TIL	...	LAND	
3	2	1	ID	VAR_1	TYPE	AAR_FRA	AAR_TIL	...	LAND
4	3	2	1	25564	5	2008	2013	...	Danmark
5	4	3	2	72639	..	2004	2016	...	..
6	5	4	3	..	4	2010	2010	...	Ghana
7	6	5	4	34621	5	0001	9999	...	Tyskland
8	7	6	5	52485	4	2010	9999	...	Libyen
9	8	7	6	28815	4	2003	2004	...	Belgien
10	9	8	7	60655	..	2007	9999	...	Danmark
...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...
n	44589	3	2009	2009	...	Danmark			

... in Colectica



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# Two types of metadata

## Structural metadata

- Used to identify statistical data
- Headlines, variable names, unit of measure, reference time etc.
- Must go together with statistical data
- Impossible to interpret statistics without it

### Statistics without metadata

Population	
All Denmark	2 881 620
Men	2 908 337
Real estate market value	
One-family houses	2 868 172
Brøndby	2 976 785

### ...with structural metadata

Population	
All Denmark	2018Q3
Men	2 881 620
Women	2 908 337
Unit : number	
Real estate market value	
One-family houses	2016
Brøndby	2 868 172
Vallensbæk	2 976 785
Unit : Average Market value (DKK)	

## Reference metadata

- Describes content, statistical processing, relevance etc.
- Can be detached from the statistical output
- Quality Reports is a type of reference metadata
- ...so is methodological metadata

### ...and reference metadata

Population	
All Denmark	2018Q3
Men	2 881 620
Women	2 908 337
Unit : number	
Real estate market value	
One-family houses	
Brøndby	2 868 172
Vallensbæk	2 976 785
Unit : Average Market value (DKK)	



# Vision: Metadata used in the entire production process



Overarching Processes							
Specify needs	Design	Build	Collect	Process	Analyse	Disseminate	Evaluate
1.1 Identify needs	2.1 Design outputs	3.1 Reuse or build collection instruments	4.1 Create frame and select sample	5.1 Integrate data	6.1 Prepare draft outputs	7.1 Update output systems	8.1 Gather evaluation inputs
1.2 Consult and confirm needs	2.2 Design variable descriptions	3.2 Reuse or build processing and analysis components	4.2 Set up collection	5.2 Classify and code	6.2 Validate outputs	7.2 Produce dissemination products	8.2 Conduct evaluation
1.3 Establish output objectives	2.3 Design collection	3.3 Reuse or build dissemination components	4.3 Run collection	5.3 Review and validate	6.3 Interpret and explain outputs	7.3 Manage release of dissemination products	8.3 Agree an action plan
1.4 Identify concepts	2.4 Design frame and sample	3.4 Configure workflows	4.4 Finalise collection	5.4 Edit and impute	6.4 Apply disclosure control	7.4 Promote dissemination products	
1.5 Check data availability	2.5 Design processing and analysis	3.5 Test production systems		5.5 Derive new variables and units	6.5 Finalise outputs	7.5 Manage user support	
1.6 Prepare and submit business case	2.6 Design production systems and workflow	3.6 Test statistical business process		5.6 Calculate weights			
		3.7 Finalise production systems		5.7 Calculate aggregates			
				5.8 Finalise data files			

## Input

- Surveys

- Validation
- Visual inspection
- Aggregation



## Output

- Documentation of statistics
- Concepts, classifications, etc.
- Documentation of registers and variables for researchers



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## Microdata

ID	VAR_1	TYPE	AAR_FRA	AAR_TIL	...	LAND		
1	ID	TYPE	AAR_FRA	AAR_TIL	...	LAND		
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3	2	1	25564	5	2008	2013	...	Danmark
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8	7	6	28815	4	2003	2004	...	Belgien
9	8	7	60655	..	2007	9999	...	Danmark
10	9	8	74111	5	2009	2009	...	Angola
11	10	9	59992	2	2001	2013	...	Polen
12	10	10	..	3	1998	2009	...	Schweiz
n	44589	3	2009	2009	...	...	...	Danmark

# Connected metadata

## Classification

- W1: LANDE I ALT
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## Statistics



**Documentation of statistics**

- TABEL1
- TABEL2
- TABEL3

## Variables

Variabel	Beskrivelse
VAR_1	...
TYPE	Køretøitype
AAR_FRA	..
AAR_TIL	...
...	...
LAND	Land

## Codeliste

TYPE	TYPE_TXT
1	Personbil
2	Bus
3	Varebil
4	Lastbil
5	Påhængsvogn
6	Motocykel
7	Knallert 45
8	Traktor
9	Campingvogn
10	Øvrige

## Concepts

**Passenger Car:** Motor vehicle for passenger transport; less than 9 passengers excl. driver.

**Truck or Lorry:** Motor vehicle for goods transport. Gross weight over 3,500 kg.

## Unit of measurement

Antal	
Procent	
Andel	
Kroner	Kroner
	1.000 kr.
Indeks	Mio. kr.
Gennemsnit	Mia. kr.
...	...



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Kør som bruger:

## Velkommen til Metadatabanken

Med Metadatabanken får du:

- Én indgang til fire typer af metadata
- Mulighed for at se en række sammenhænge mellem de forskellige metadata
- Metadata organiseret både alfabetisk og efter Danmarks Statistiks emnestruktur

Metadatabanken samler eksisterende metadata primært fra Colectica, Times, Moduldata og FSE's grunddatabank, som så vidt muligt er knyttet sammen. Metadata omfatter:

- Statistikdokumentationer
- Fælles begreber
- Klassifikationer og kodelister
- Dokumentation af dataserier og variabler

### Gå direkte til:

- Statistikker med tilknyttede metadata
  - Efter emne
  - Alfabetisk
- Forskningsdata (grunddata)
  - Efter emne
  - Alfabetisk
- Klassifikationer
  - Efter emne
  - Alfabetisk



# Quality Assurance of metadata

- Documentation of statistics

- Each publication of statistics must be covered by updated reference metadata, wherein the content, processing and five quality dimensions (relevance, accuracy and reliability, timeliness and punctuality, comparability and accessibility and reliability) is elaborated in detail

- Classifications and code lists

- Ad hoc, but equally systematic in its practice. Whenever a classification or code list needs to be created or updated, a peer who specialises in compliance with Neuchâtel, assists the responsible statistician with understanding, which classification object types are necessary, to load a classification into Colectica.

- Statistical concepts

- Statistical concepts are meant to be shared between statistical products. Therefore, they must rely on agreed upon definitions and be described in an appropriate manner.

- Documentation of data series and variables

- Within documentation of data series and variables, the establishment of quality assurance procedures is a work-in-progress, to be decided later.



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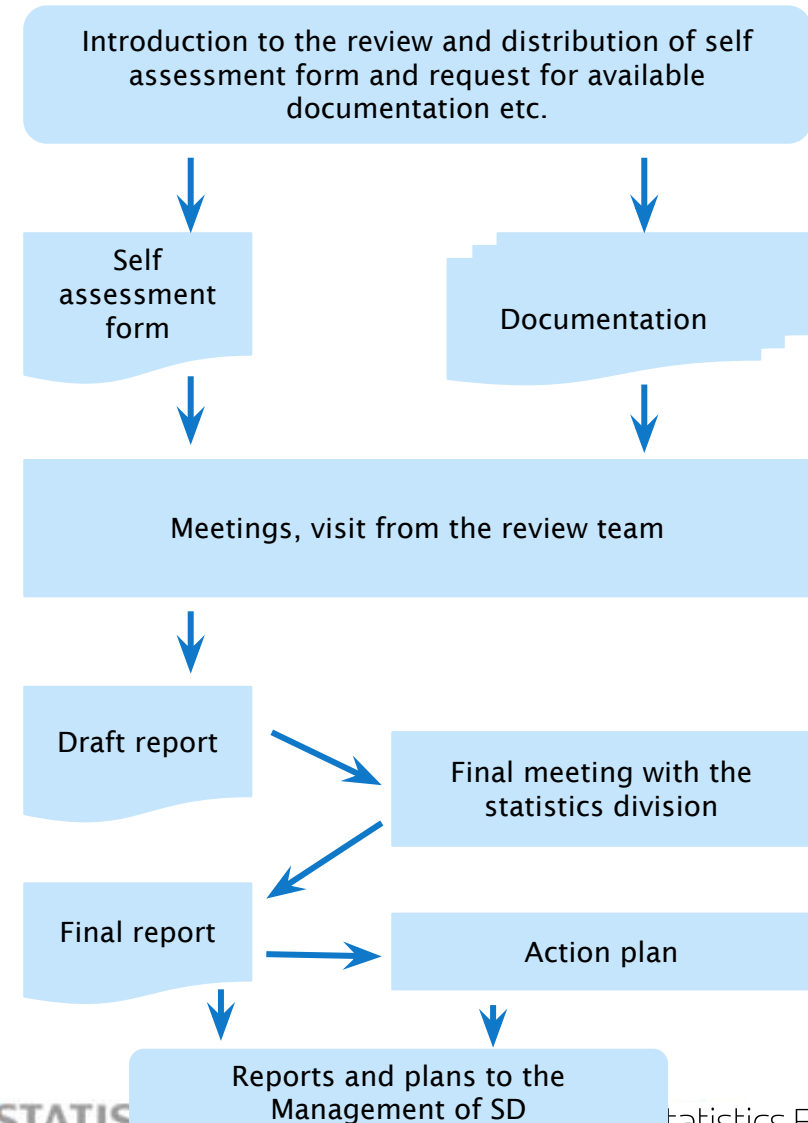


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# Quality reviews in SD

- Started in SD in 2015
- In 2023 – three statistical products
- Review by team of experts
  - Self assessment based on Code of Practise
  - Review of user needs and the fulfilment of these
  - Review of production processes – GSBPM used to assist
- Report with quality review and recommendations
- The division in charge submits an action plan
- The quality unit follows up on the action plans



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STATISTICS LITHUANIA  
STATE DATA AGENCY



# Quality reviews

- Choosing statistical products for quality reviews
  - Through the quality assurance process of documentation of statistics
  - Through the wishes of the directors and other stakeholders
- Self-assessment of compliance of CoP
- Each of the indicators of CoP from principle 4 are evaluated
- QAF is used for inspiration on the level of single statistics
- Degree of compliance
  - A – Most of the demands fulfilled, including documentation
  - B – Some of the demands fulfilled, but still some missing
  - C – Only few of the demands fulfilled, much missing
  - X – not relevant
- Review of the production process using GSBPM to assist



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**Thank you for your attention  
and support**

