

# Developing reliable data for waste related issues

Brigitte Karigl, 21.12.2011

# Overview

- Development of waste data collection in Austria
- Reporting obligations of waste holders, obligations of administrative bodies/competent authorities
- Queries and evaluation of EDM-data

# **Development of waste data collection in Austria**

# Municipal Waste

- In Austria, comprehensive waste data collection started with waste surveys in municipalities (1973, 1980). Data collection focused on municipal and bulky waste, and on landfills.
- Total survey in 1984: Questionnaires sent to 2.301 municipalities. A return rate of nearly 100% was achieved.
- From 1990 onwards: Municipalities are obliged by province law to provide data on an annual basis, on the amount of municipal waste which has been collected and treated.
- From 2011 onwards: Municipalities are obliged to report amounts of MSW by means of EDM

# Waste from Enterprises

- Sample survey on waste generation in enterprises (industry and commerce, wholesale and retail trade), first in 1984. Questionnaires sent to ~ 11.000 enterprises. A return rate of 65% was achieved (no legal obligation to respond to questionnaires).
- Various studies
- Representatives sample survey on waste generated by the production sector (NACE C-F) in 2002

# Waste from Enterprises

## Introduction of using administrative data for data collection on **hazardous waste**

- The Hazardous waste data-network, established in 1986 for only one province in Austria, was extended to overall Austria in 1990.

Legal basis:

"Persons in possession of hazardous waste have to register type, amount, provenance and destination of the waste by means of the way-bill system."

(Austrian Waste Management Act, 1990)

- Hazardous waste data network integrated into EDM as of 2007

# Waste Collection and Waste Treatment

- Landfills: national reporting obligation on an annual basis (administrative data):  
„.... documentation concerning the total quantities of waste deposited in the preceding calendar year, broken down according to waste owner, type of waste (description, waste key number) must be submitted to the competent supervisory authority and the Federal Ministry for the Environment ... (Austrian Landfill Ordinance from 1997)
- Treatment installations: regular surveys on a voluntary basis (data collection for Federal Waste Management Plan: type and amount of treated waste)
- Since 2010: annual waste balances to be reported by enterprise from the waste management sector by means of EDM

# **Reporting obligations of waste holders**

## **Obligations of administrative bodies/competent authorities**



# Legal Basis for Data Collection and Reporting Obligations

- In Austria, waste data collection respectively the obligation to report waste management data is laid down in waste management legislation.
- There is no “Law on waste statistics” to stipulate waste data collection under statistical criteria.
- Consequently, the main actors in waste data collection are administrative bodies and supervisory authorities in the field of waste management/environmental protection. Support from the Statistical Office (Statistics Austria) is required when reports fulfilling statistical requirements (e.g. break down of waste generation according to economic activities) have to be prepared.

# Obligations of the Initial Producers of Hazardous Waste

An initial waste producer who accumulates an annual quantity of waste oils of at least 200 liters or other hazardous wastes repeatedly, at least once per year, has to register himself in the company register of EDM (§ 20(1) of Waste Management Act 2002):

1. Name and seat of enterprise
2. addresses of sites
3. Economic activity according NACE-classification

# Obligations of Waste Collectors and Waste Conditioners

Waste collectors and conditioners shall forward their waste-relevant master data electronically to the company register of EDM (§ 21 WMA).

1. Name and seat of enterprise
2. addresses of sites
3. Economic activity according NACE-classification
4. Waste treatment installations, types of treatment installations (e.g. landfill)
5. treatment methods (i.e. R/D)

Subsequent to registration, the Minister of Environment allocates identification numbers to the enterprise and its various sites.

# Record keeping and reporting obligations

Waste holders (initial producers, collectors and conditioners) shall keep annual records of their wastes (waste types, waste amounts, origin of waste, whereabouts of wastes) a list of the origin of accepted waste types, the relevant quantities and relevant whereabouts, including type and quantity of materials returned to the economic cycle, for the previous calendar year (annual waste balance).

Waste collectors and waste conditioners have to report annual waste balances to the governor of the province not later than on 15 March of each year. The report shall be forwarded to a register as set out in § 22 Par. 1 in electronic form.

Wastes received from initial waste producers shall be reported as total value per type of waste, broken down by the federal province of origin of the waste. In all other cases, the report shall be broken down by transferors or recipients of the wastes.

Specific reporting obligations for hazardous waste and transfrontier waste shipment, .....

# Obligations of the Ministry of Environment

The Federal Minister of Agriculture, Forestry, Environment and Water Management shall set up and keep an electronic register for the waste-relevant master data (“company register”)

of initial waste producers of hazardous waste

of waste collectors and conditioners

of treatment plants, including the relevant data from the permit (plant capacities, types of wastes included in the plant permits, scope of authorization to collect and treat)

.....

# Obligations of the Ministry of Environment

The Federal Minister of Agriculture, Forestry, Environment and Water Management shall set up and keep an electronic register

- with the data to be forwarded to the relevant competent authority in accordance with the Waste Management Act (“data reported by companies according to their reporting obligations”)
- and with the data on import and export of wastes

# Queries and evaluation of EDM-data

## Aims of data-evaluation

- Support the competent authorities in their enforcement duties by providing specific, up-to-date information e.g. on selected notifications, selected notifiers or selected transports.
- Generate comprehensive information, mainly on waste management issues
- Quality assurance of the data processed by EDM



# Data evaluation - Transfrontier Waste Shipment

Relevant data - from the point of data evaluation –of a notification are

Notification Number (Identification Number)

Type of TFS: Export – Import – Transit

Type of Disposal/Recovery

Total intended number of shipments

Total amount of waste to be shipped

Notifier (name& address) /export country

Consignee (name& address) /import country)

Identification of waste

Type of Recovery/Disposal

Means of Transport

## Example – query of selected notificaton in EDM

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Übersicht Notifizierungen

Version 4.1.2



Übersicht Notifizierungen

Schnellerfassung

Transportmeldung

Eingangsmeldung

Verwertungs-  
/Beseitigungsmeldung

Auswertungen

Übersicht Notifizierungen Seite: 1/1

Suche:

AT 012600

Suche

Erweiterte Suche

Notifizierung Nr.	Aktenzahl	Notifizierender	Anlage	Bezeichnung	Offene Menge	Gültig von - bis	Status	Meldung
<b>AT 012600</b>	1407/09	[redacted] GmbH	[redacted] a.s.	sonstige Abfälle (einschließlich Materialmischungen) aus der mechanischen Behandlung von Abfällen mit Ausnahme derjenigen, die unter 19 12 11 fallen	17.064,05t	11.06.2009 - 10.06.2010	Zustimmung alle	

< Zurück

Weiter >

Detailansicht Notifizierung **Nr. AT 012600**

Meldungsübersicht

Druckansicht

Abbrechen

Allgemein

**Typ:** Export

**Notifizierung:** AT 012600

**Aktenzahl:** BMLFUW-UW.2.1.1/1407-VI/1/2009-Ey **Sachbearbeiter:** Wilhelm Eybl (BMLFUW, Abt. VI/1)

**Empfangsbestätigung:** ab 12.07.2007

**Verbringung:** mehrmalig - **Verwertung - R1**

**Genehmigung gültig von - bis:** 11.06.2009 - 10.06.2010

**Allfällige ALSAG Relevanz**

**Status der Notifizierung:** Zustimmung alle

Statistik

Anzahl der  
vorgesehenen  
Verbringungen

700

Gesamtmenge

25.000,00 t

Zur Zeit offene Menge

17.064,05 t

Bisherige Meldungen

Transport

199

Eingang

275

Verwertung/Beseitigung

115

Menge

4.560,52 t

6.279,95 t

2.673,84 t

**Notifizierender**

\_\_\_\_\_ GmbH  
 \_\_\_\_\_ Straße 141  
 \_\_\_\_\_  
 Bundesland: Niederösterreich  
**Osterreich**  
 E-Mail: \_\_\_\_\_

**Empfänger**

\_\_\_\_\_ (Schweizer)  
 \_\_\_\_\_  
 \_\_\_\_\_  
**Slowakei**  
 \_\_\_\_\_  
 Kontaktdaten:

**Identifizierung des Abfalls:**

Systematik	Abfallcode	Beschreibung
EU-Abfallverzeichnis	! 19 12 12	sonstige Abfälle (einschließlich Materialmischungen) aus der mechanischen Behandlung von Abfällen mit Ausnahme derjenigen, die unter 19 12 11 fallen
Ö-Norm	! 91107	heizwertreiche Fraktion aus aufbereiteten Siedlungs- und Gewerbeabfällen und aufbereiteten Baustellenabfällen, nicht qualitätsgesichert

**Beseitigungs- / Verwertungsverfahren:**

**R/D-Code**  
 ! R1 Hauptverwendung als Brennstoff oder andere Mittel der Energieerzeugung

**Transportart(en):**

St

**Verpackungsarten:**

- 8. Schüttgut
- 9. sonstige (bitte angeben): Ballen

## Examples - data evaluation to supply comprehensive information on waste management issues

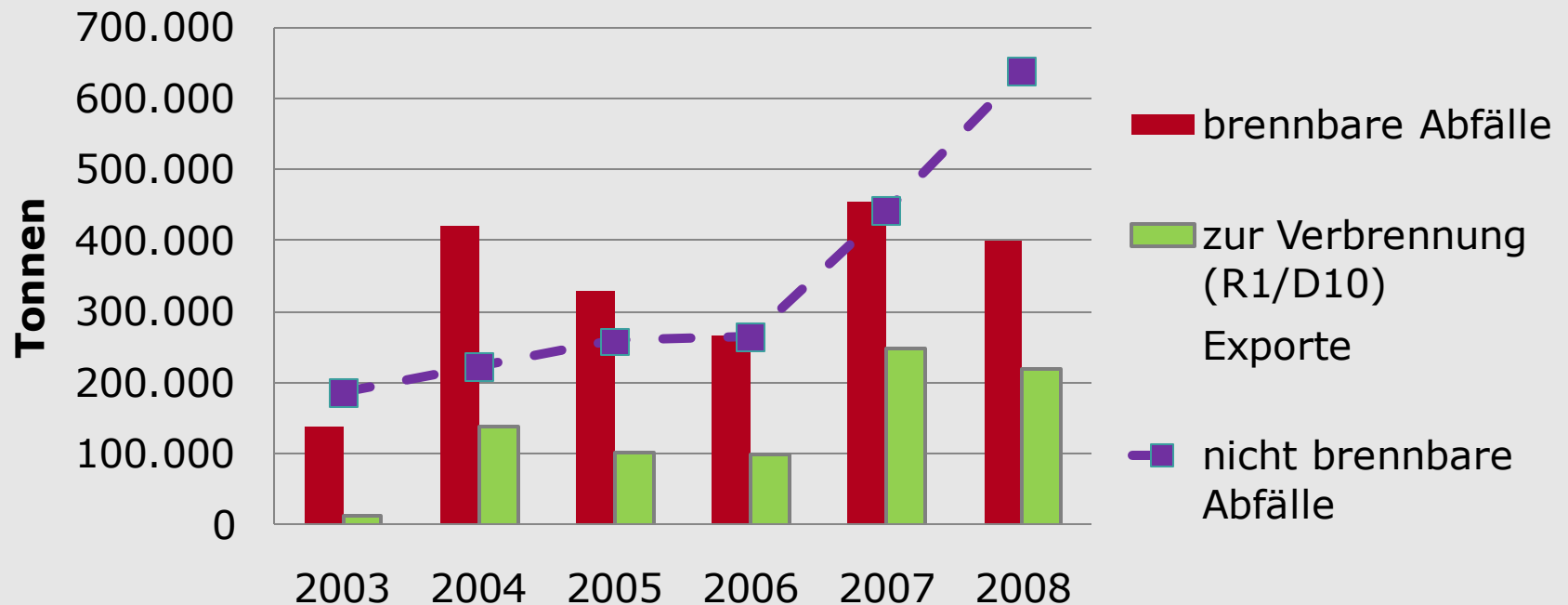
Time series of

- Waste exports, broken down by R/D-Codes
- Waste shipments from AT, broken down by countries of receipt
- Export of “combustible waste” (hazardous/non hazardous)
- Waste exports, broken down by waste codes

## Waste exports, broken down by R/D-Codes

	EXPORT					
	Jahr					
	2003	2004	2005	2006	2007	2008
D1	65.328	182.929	155.960	65.853	28.465	451
D5						
D8					44	23
D9	725	1.279	1.941	894	9.036	733
D10				34.235	109.722	103.303
D12				2.844	22.151	12.639
D13		24			3.283	3.095
D14				642	2.388	7.385
R1	12.083	137.788	102.504	65.884	139.456	114.988
R2	627	678	569	589	873	824
R3	85.739	139.609	119.799	79.329	84.018	58.309
R4	136.469	150.020	147.960	114.732	155.073	173.340
R5	20.151	28.460	52.087	125.195	203.187	104.416
R6	208	438	154	300	358	360
R7						
R8						
R9	2.133	2.688	5.038	8.260	11.905	11.578
R10			41	8.519	58.795	346.499
R12				16.080	47.379	90.207
R13				7.942	21.342	10.482
<b>Gesamt</b>	<b>323.462</b>	<b>643.913</b>	<b>586.052</b>	<b>531.299</b>	<b>897.473</b>	<b>1.038.632</b>

## Waste exports (combustible waste) , broken down by R/D-Codes



## Waste shipments from AT, broken down by countries of receipt

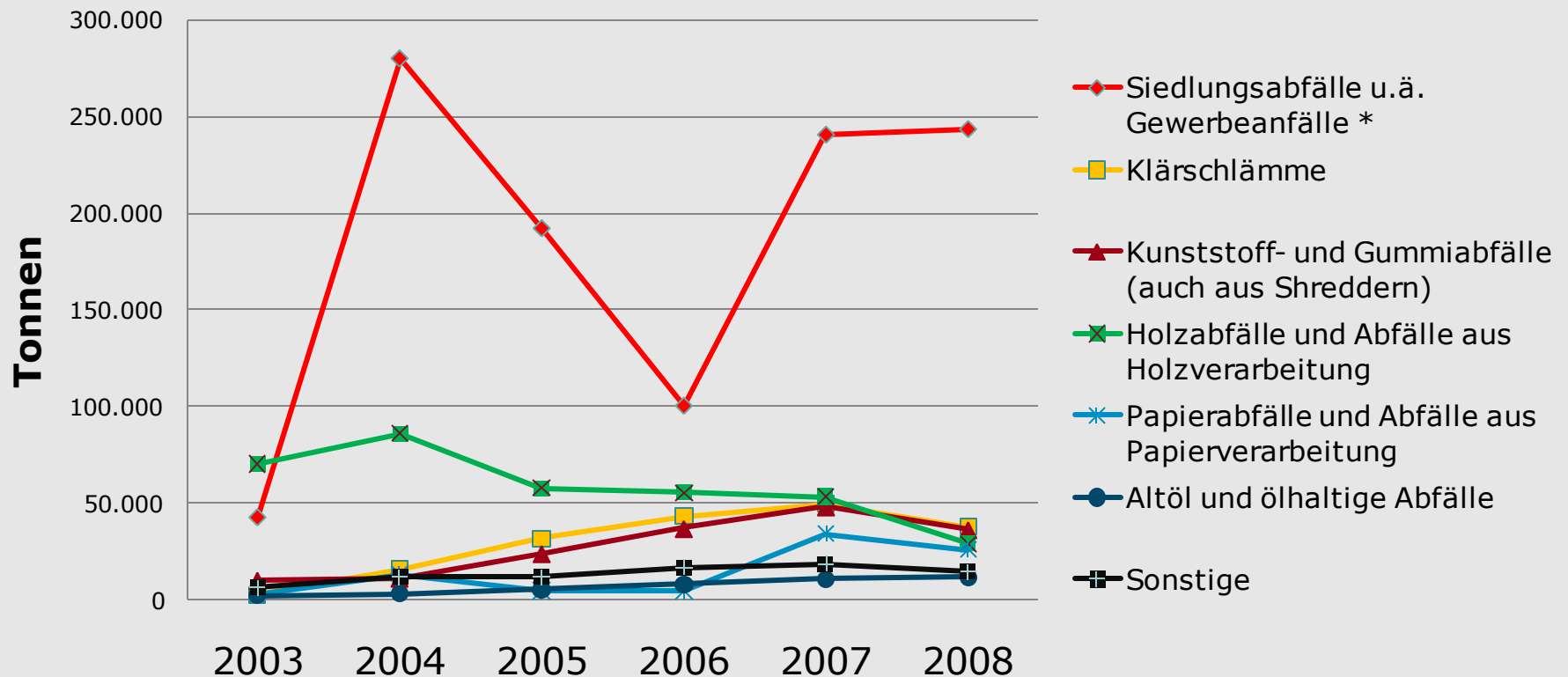
Country of receipt	EXPORT aus AT (t)					
	Jahr					
	2003	2004	2005	2006	2007	2008
AT	13.503	0		670		
AU						
BA						
BE	1.602	2.431	1.422	2.269	3.066	3.593
BG						13.740
CA						
CH	10.591	16.676	17.628	47.182	77.665	84.660
CN						
CS						
CZ				4.979	11.870	24
DE	203.922	498.740	462.970	361.344	606.567	776.240



## Waste exports, broken down by waste codes

Verbringung nach Abfallarten mit Klassifizierung "brennbar"				EXPORT					
Verbringung - Massen in Tonnen (Auswertung Umweltbundesamt 27.07.2009) Datenquellen: eVerbringung: Datenstand 20.7.09 VbVO: Datenstand 24.3.09 Klassif. "brennbar" (Definition Karigl)				Jahr					
				2003	2004	2005	2006	2007	2008
Abfallart	ge- fahr	brenn- bar							
31214 Bleiaschen	j	n							
31217 Filterstäube, NE-metallhaltig	j	n	4.884	13.656	11.942	9.252	11.859	10.989	
31221 sonstige Schlacke aus Stahlerzeugung	j	n					1.782	865	
31223 Stäube, Aschen, Krätzen aus sonstigen	j	n	69.704	66.491	57.884	58.986	73.777	81.944	
31301 Flugaschen, -stäube aus sonstigen Feuerungsanlagen	n	n	1.379	1.612	490	882	426		
31308 Schlacken, Aschen aus Abfallverbrennungsanlagen	j	n	1.240	375	3.271	23.345	13.160		
31308 88 Schlacken, Aschen aus Abfallverbrennungsanlagen	n	n					13.670	19.892	
31309 Flugaschen, -stäube aus Abfallverbrennungsanlagen	j	n	13.877	28.599	34.557	43.450	43.102	30.179	
31309 88 Flugaschen, -stäube aus Abfallverbrennungsanlagen	n	n				190		5.710	
31312 feste salzh.Rückst. a.	j	n	3.828	2.747	3.103	2.888	2.727	3.731	
31312 91 feste salzh.Rückst. a.	j	n					50	25	
31314 feste salzh.Rückst. a. Rauchgasrein. für	j	n							
31314 88 feste salzh.Rückst. a. Rauchgasrein. für	n	n							

## Waste exports (combustible waste), broken down by waste codes



## 1) Datenqualitätskontrolle - Original-DB

### Transportart

Transit  Import  Export  ALLE

### Fehlerart (Mehrfach-Auswahl mgl.)

- Masse > Gesamtmasse (m > mG)
- Anzahl Transporte > Gesamtanzahl (aT > aG)
- TransportDatum > ErstellDatum (dT > dC) !! nur interne User
- TransportDatum > EingangsDatum (dT > dE)
- EingangsDatum > VerwertungsDatum (dR > dV)
- Masse > als 2x p. Transp. genehmigt (m > 2x)
- Masse > x kg (m > xkg)
- Masse > 0,1 und < 1000 und <= 100kg (m kl)

### Massen-Obergrenze in kg für Abfrage "Masse > x kg"

100000

### Beobachtungszeitraum in Tagen

7

### Anmerkungsfelder in eVerbringung

unbearbeitet

### Report Format

Web

Report starten

## Quality assurance

Criteria to be selected for QA, e.g.:

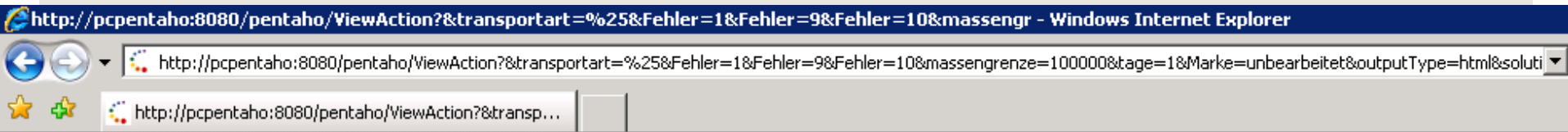
Amount of waste reported for individual transport

- is higher than total amount of notification

- is higher than x kg

- is very small

# Quality assurance – identify implausible data-sets=> need for action!



## eVerbringung - EchtDB / Datenerfassungs - Fehlerkontrolle

September 24, 2009 @ 23:15

notifizierung	vTyp	Lfnr	gAnz	masseGArt	masse	Transp	Eingang	Verwertg	erstellt	geändert	fehler(-arten)	
IT 010828	Tr	10	25	12.000.000 D	610.820	17.03.09		24.09.09	24.09.09	24.09.09 11:04	m>xkg . . .	33.074
												1

notifizierung	vTyp	Lfnr	gAnz	masseGArt	masse	Transp	Eingang	Verwertg	erstellt	geändert	fehler(-arten)	
AT 011598	Ex	42	120	82.800.000 T	610.000	04.06.09	04.06.09	05.06.09	24.06.09	24.09.09 10:13	m>xkg . . .   t.TM	33.811
AT 011598	Ex	45	120	82.800.000 T	400.000	13.06.09	15.06.09	16.06.09	19.06.09	24.09.09 15:27	m>xkg . . .   kein	33.811
AT 011599	Ex	42	120	19.200.000 T	133.000	04.06.09		15.06.09	24.06.09	24.09.09 10:14	m>xkg . . .   t.TM	33.811
AT 012572	Ex	1	50	20.000 T	373	28.05.09		01.09.09	01.09.09	24.09.09 12:53	m k	33.811
CH0004715	Im	12	13	10.000 T	105	28.05.09	28.05.09	05.06.09	07.07.09	24.09.09 14:23	m k	33.811
												5
												6

Auswahlfilter: Fehlerarten: 1,9,10 Zeitraum: 1 Anmerkung: unbearbeitet

## Procedures of data-evaluation

- Hard-coded queries, implemented within the EDM-application following strictly the process model, which meet well-defined requirements of the enforcement authority and other institutions/persons entitled to make queries
- Data warehouse queries:  
Data are extracted from EDM, transformed (summarized into aggregates) and loaded into a data repository. Data from the data repository are read and processed for reports
- Ad-hoc reports, generated by using a “business intelligence tool” (Pentaho) to read and process EDM data

# Why different procedures of data-evaluation?

- The hard-coded queries are in general quite simple and straightforward so as not to slow the performance of the operational system. Advantage: Up-to date information on original data
- In the data warehouse, data is stored in a structure designed to facilitate reporting. The data warehouse is updated from data in the operational system on a regular basis. Reporting does not impact the operational system's performance, thus complex data-evaluation procedures can be made.
- Simple ad-hoc reports for only internal use can be implemented quickly on demand

## Example – EDM query: National consignment notes received by competent authority on Jan 2nd

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 Version 2.3

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**Suchkriterien**

Postalischer Eingang von (TT.MM.JJJJ): 02.02.2009

ID	Abfallart	Masse [kg]
944776	PDF HIST 35212	1.800,00
944777	PDF HIST 54402	2.840,00
944778	PDF HIST 52723	405,00
944779	PDF HIST 35322	34,00
944780	PDF HIST 35339	3,00
944781	PDF HIST 35338	25,00
944782	PDF HIST 54930	138,00
944783	PDF HIST 54102	340,00
944784	PDF HIST 55370	48,00
944785	PDF HIST 55502	384,00
944786	PDF HIST 59405	140,00
944787	PDF HIST 55502	1.557,00
944788	PDF HIST 54930	158,00
944789	PDF HIST 54102	740,00





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Vienna ■ 21 December 2011