MODERNISATION: SOME GERMAN EXPERIENCES

UNECE ModernStats Workshop, Geneva, 11.-13.04.2018
Agenda

» Motivation
» A short history of the evolution of official statistics in Germany
» Triggers and drivers
» Lessons learned
Motivation

The story of modernisation of official statistics is a story of growing maturity...

.. is it?

More than 100 NSIs in the world are continuously trying to improve their production systems and learn from each other...

.. do they?

Coming to conferences and workshops such as this, we hear stories of success...

.. where are the failures?
Short history of the evolution of German official statistics: 1970‘ies

» Let’s go back in time..

» In the 1970‘ies the statistical world in technical terms was simple: Statistical production = short batch programs (mainframe) + manual intervention

» Dataflows were essential

» Production in silos
Short history of the evolution of German official statistics: 1970’s
Short history of the evolution of German official statistics: 1980‘ies

» In the 1980‘ies new concepts (middle range Computers and PCs) lead to an IT-revolution

» The new equation:
  Statistical production = Dialog oriented programs + (less) manual intervention

» This was still based on mainframe computer

» Requirements exploded, IT-staff was only partly able to cope (number and skills of people)

» Start of „Shadow IT“ (the „Do-it-yourself“ approach)
Short history of the evolution of German official statistics

» The gap between increasing demands by domain specialists and resources in IT lead to three different approaches side by side in the 1990’s:
  » Domain tailored applications (DTA) in 3rd and 4th generation programming languages (Natural, Pascal, later Java)
  » Tool chain: Crosscutting applications
  » DIY: Using script languages and specialized programming languages directly in production

» These patterns coexist and had their individual merits and drawbacks
Short history of the evolution of German official statistics: 2000 till today

- The toolchain of crosscutting applications became the major paradigm in German Official Statistics and the primary goal was to close the gaps.

- Java-applications were still in high demand and the development rationalised by creating configurable modules for specific purposes (e.g. data integration, validation, editing).

- But the most flourishing approach became DIY, which was not supported by IT and top-level management.

- How comes?
Short history of the evolution of German official statistics: 2000 till today

» The toolchain was not well adapted to the (specific) statistical business process(es)
» Individual Java-applications needed an awfull long time to be productive
» The advantages of DIY were its flexible and quick availabilty. The drawbacks came later or were hidden (quality issues, maintainability, hidden costs)
Short history of the evolution of German official statistics: 2000 till today
The way forward (since 2010)

» Using the ModernStat models
» Integrating our approaches („Best of three worlds“)
» Using CSPA as reference framework
Triggers and hinderances

» What triggered changes in the system?
  » New opportunities (mainly IT-innovations)
  » New demands
  » Rising costs of production

» What hindered progress?
  » Legacy systems
  » High investments in new technologies and skills of staff
  » No clear target
  » Sticking to old paradigms
What has that all to do with modernisation the UNECE way?

» Three stages:
  » No explicit architecture / target (before 1990)
  » A German modernisation initiative (1990 – 2010)
  » The international modernisation initiative (ModernStats)

» So we took some cul-de-sacs and fall into some painful traps (that you do not have to copy ..)

» The next slides give an overview about what we learned
Lessons learned I (Business view)

We started by creating our own Enterprise Architecture framework (costly and not very successful)

We started by focusing on tools (and often ignored the business requirements)

We pressed the SMDs* into one standard process (and valued any deviations as defects)

Our SMDs were quite successful to resist by sticking to their grown processes (“Golden taps problem“)

* SMD = Subject Matter Departments

ModStats Models provide a useful methodological framework for the modernisation of your own national system already

Start by analyzing your business processes by adopting GSBPM (and compare them)

Do not fall into the trap of expecting one single statistical process in your whole office..

.. but be rigid in defining optimized processes by sharing responsibility (SMD and IT)
Lessons learned II (Data and Metadata view)

We stucked to silos and tried to modernise the statistical production along the organisation

We ignored the crucial role of metadata and started late to harmonize them

We harmonized our data formats early and kept it (instead of switching to later developed international standards)

We didn’t organised data storage and – management, so data are distributed across organisation and purely managed

SDWH/ DA

Metadata/ GSIM

DDI/SDMX

Data-management

Use the concept of statistical data warehouses (ESS) and Data architecture (UNECE). Be part of the active community.

The crucial role of metadata should be anticipated in any modernisation project. GSIM is a good reference point

With DDI (for microdata) and SDMX (for macrodata) established data standards (and corresponding tools) are available. Use them

Organise data storage and management from the beginning
Lessons learned III (Technical view)

We created whole scale applications (monoliths) and got systems difficult to use, to change and to replace.

We increased the functionalities by incorporating new features in existing applications.

We take for granted that output from one application will not fit as input to another app. Transformation was done manually.

We build everything ourselves and missed opportunities to share (and cut costs!)

Think small. Modularise your applications to independent services and components. Think CSPA!

The crucial role of metadata should be anticipated in any modernisation project. GSIM is a good reference point.

Adopt an architectural pattern that helps in integrating new modules.

Join forces and participate in the international community of official statistics by using other people and contributing your own services.

Modularise
Optimise for specific purpose
Integrate
Reuse
Lessons learned IV (Organisational view)

Evolution: Create initial integration platform, incorporate applications by wrapping them and replace old apps by new services.

Small steps, lots of communication, do not promise paradise.

Integrate agile principles in your modernisation strategy: Interdisciplinary (and joined responsibility), small but working prototypes and pilots instead of huge concepts, solving a business problem.

Create a culture of failure and reflect your strategy from time to time.

Migration

Handle change

Be agile

Learn from failure

We had to use „bing bang scenarios“ because our systems were so big (= maximise risk).

We expected all stakeholders to understand intuitively the merits of modernisation. They „resisted“.

We followed a masterplan and worked in projects lasting a decade. Responsibility was clearly divided between the different stakeholders.

We have not questioned our targets regularly and failures were seldom used for rethinking.

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Lessons learned V

Share!