Ministry of Industry, Business
and Financial Affairs

Digital Denmark

- the underpinning of a strong life science sector

May 2019

MINISTRY OF INDUSTRY, BUSINESS AND FINANCIAL AFFAIRS

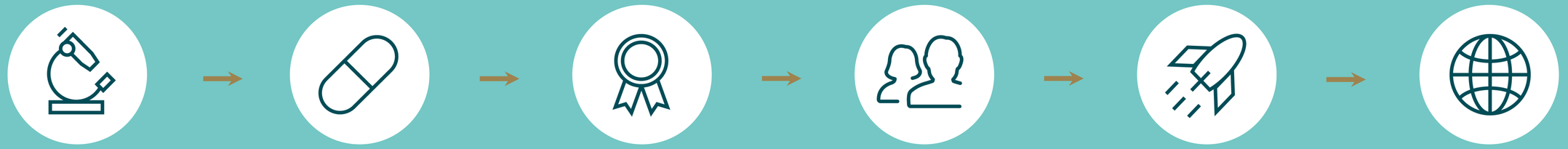
Digital Denmark

- Life Science as a political priority
- Opportunities
- The challanges
- Danish Examples

VISION

Denmark as a leading life science nation in Europe

National Growth Strategy for Life Science



Attractive to conduct R&D in DK

More clinical research to DK

A top-class Danish Medicines Agency

Better access to skilled labour

More start-ups and digital transformation

Targeted internationalization efforts

A life science office in the Ministry of Industry, Business and Financial Affairs

A Life Science office in the Ministry of Industry, Business and Financial Affairs

Primary task:

- Implementation of the life science growth strategy
- Ministerial service
- Analysis and benchmarks
- Initiative about innovative procurement
- Dialogue with stakeholders

In-house acces to policy areas such as:

- Financing
- Patents and EU-related matters
- Digitalisation
- International labour force
- Business promotion
- Administrative burdens

MINISTRY OF HEALTH

Ministry of Higher Education and Science Denmark

UDENRIGSMINISTERIET
Ministry of Foreign Affairs of Denmark

Ministry of Industry, Business and Financial Affairs

Health Challenges Denmark vs. Canada

Current expenditure on health *(Pct. of GDP, 2017)*	Hospital beds *(Per 1000 population, 2016)*	Medical graduates *(per 100.000 population, 2016)*
Denmark		
10,4 pct.	**2,6**	**22,1**
2 pct. rise 1980-2017	1,7 hospital bed less since 2000	9,7 graduate more since 1980
8,8 OECD average	4,7 OECD average	12,0 OECD average
Canada		
10,2 pct.	**2,6**	**7,9**
3,6 pct. rise 1980-2017	1,2 hospital bed less since 2000	0,8 graduate more since 1980

Status quo is not an option

Changed demography

More elderly and chronic patients require new and efficient treatments

New players

Multinational tech companies, real world data from sensors, devices, PROs, and SoMe

Lack of ressources

Too few doctors, nurses and skilled personal

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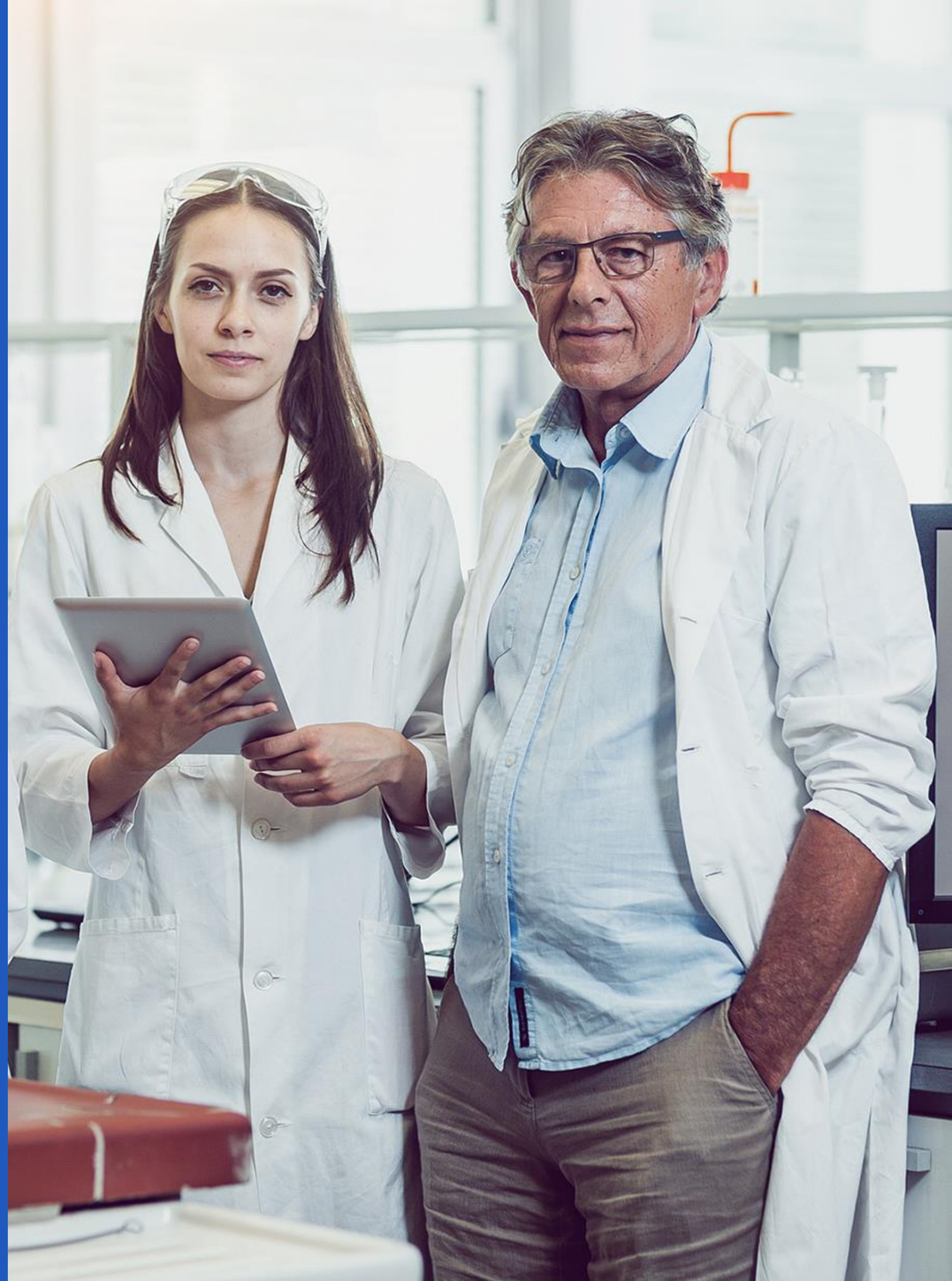
Digitial transformation

What are the Danish opportunities?



Why digitalisation?

- Productivity and prosperity
- Rapid change are well suited to a small, open, flexible and innovative country
- It already affect industries, such as life science, the financial sector and the maritime industries

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The Digital Economy and Society Index (DESI)

DESI-Score	2018
DNK	0,72
SWE	0,70
FIN	0,70
NLD	0,70
IRL	0,61
UK	0,61
BEL	0,61
EST	0,60
ESP	0,58
AUT	0,58
OECD	0,56
DEU	0,56
SVN	0,53
PRT	0,53
CZE	0,52
FRA	0,52
LVA	0,51
SVK	0,49
HUN	0,47
POL	0,45
ITA	0,44
GRC	0,38

The index: Five dimensions and 40 indicators:
a) Digital public services
b) Internet use
c) digital skills
d) digital infrastructure
e) use of digital technology in companies

Strenghts in Denmark

Very good healthdata

High quality data available for long periods of time, and the personal identification number makes it possible to link data across registers.

High trust level

Danes have a large trust in public authorities and a willingness to share their healthcare data*

*Population Health Management:
Deling af patientdata (KMD, August 2017)

Universal healthcare

Denmark has free and equal access to healthcare for all citizens. This is financed by general taxes

What makes Danish Health Data unique?

A long tradition of collecting and utilizing Health Data

Comprehensive Health Data registries

A unique Central Person Registry

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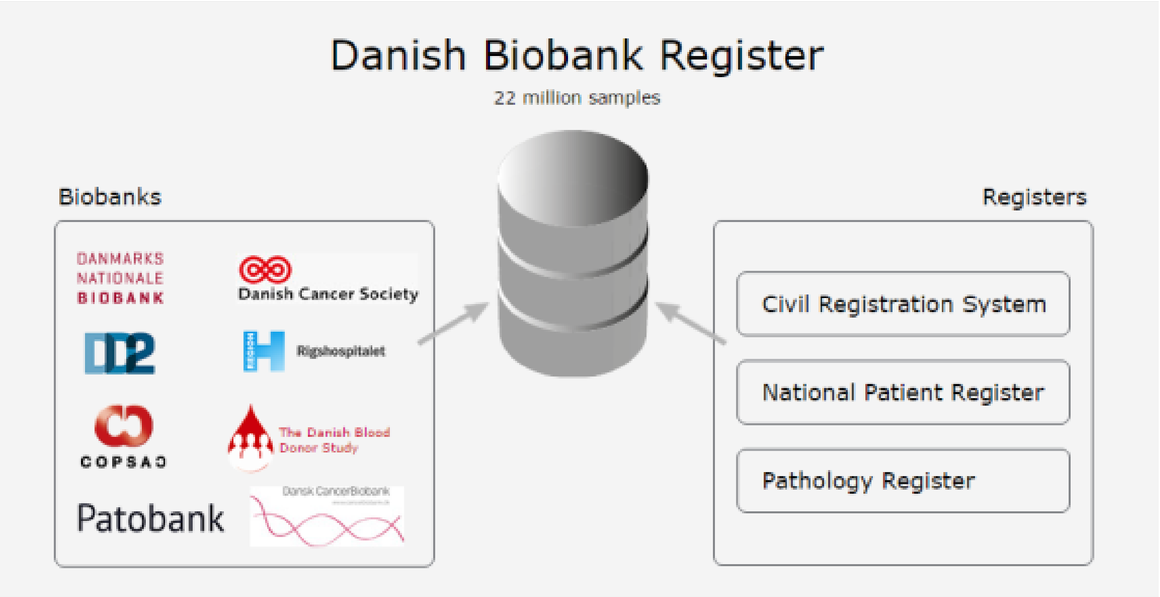
An example:

Danish National Biobank

The Danish National Biobank is one of the most advanced and comprehensive of its kind



Source: Danish National Biobank

- **Samples and health data from all major biobanks and databases**
- **22 mio. samples from 6 mio. people**
- **500.000 new samples in the biobank every year**
- **All health data are anonymized**
- **Researchers have online access to combined data from all the biobanks participating in the biobank initiative**

Another example:

More than 160 databases

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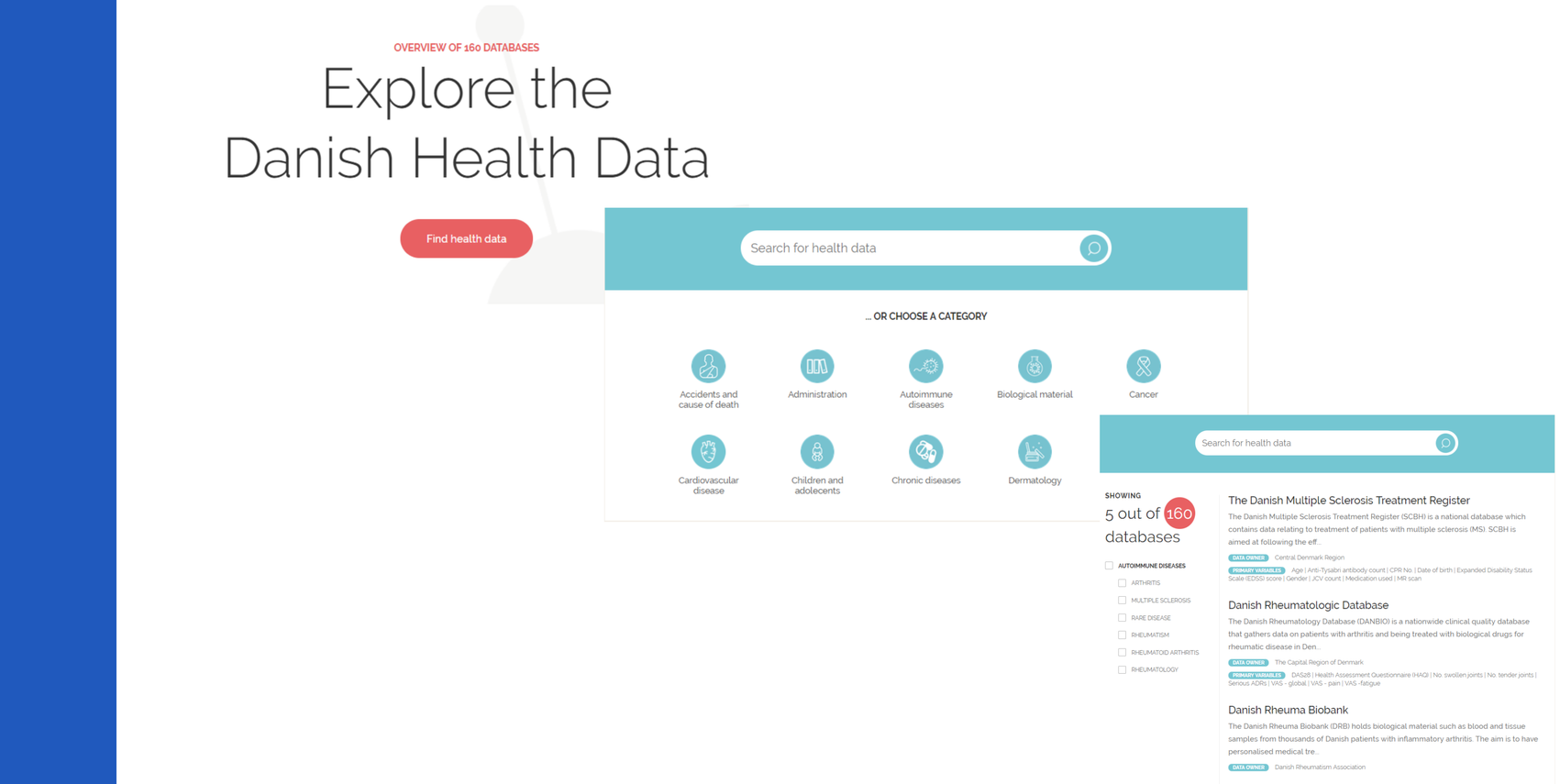
Data Saves Lives+

abvie · BAYER · FIERS · LF · novo nordisk · pharma danmark · DANSK ERHVERV · LEO · CITY OF COPENHAGEN · Lundbeck · REGION H The Capital Region of Denmark · DANSKE REGIONER · IQVIA · LEO Innovation Lab · REGION H Rigshospitalet · COPENHAGEN CAPACITY · NOVARTIS · Roche · SAP · SIEMENS Healthineers · Pfizer

COPENHAGEN HEALTHTECH CLUSTER | Data Saves Lives.



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Harnessing the best health data in the world

Examples of the use of health data in Denmark

Harnessing the best health data in the world

(EMS examples)

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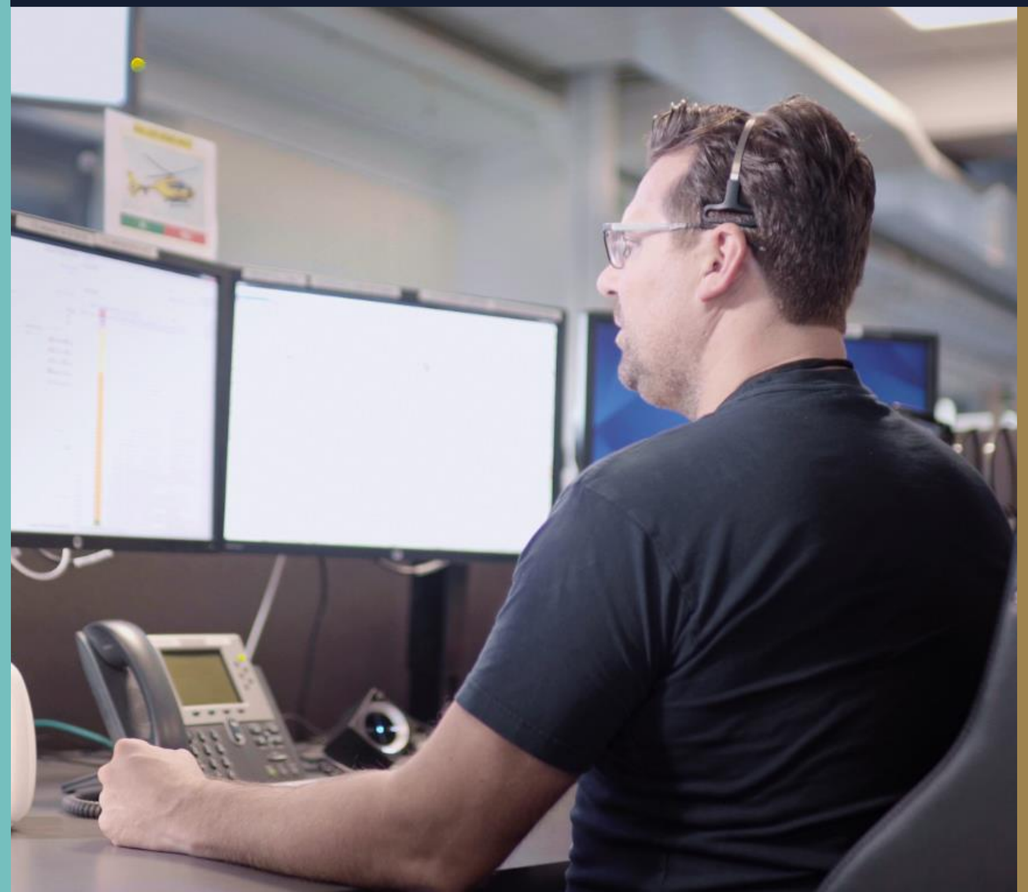
AI helps medical dispatchers identify cardiac arrests patients



150 more patients now being recognized prior to the ambulance arriving

corti

Harnessing the best health data in the world

(EMS examples)

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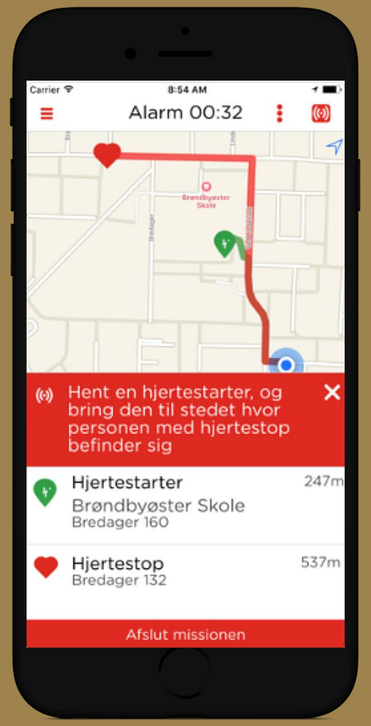
Electronic patient records in Danish ambulances

Harnessing the best health data in the world

(EMS examples)

”Heart runner” app



Harnessing the best health data in the world

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Central Personal Registry – the unique identifier

- Unique identifier that enables medical research based on historical data from the last 40-50 years
- Combines data and information about an individual person
- Enables research from multiple health data registries

- **Combining data in multiple ways**
- Pregnancy, labor and birth
- Micro biological diagnosis
- Use of medicine (consumption, habits, volume)
- Vaccines
- Schools and education
- Family, residence and occupation
- Test results from labs
- Bio samples

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Central Personal Registry – the unique identifier

Higher Mortality among patients with severe ulcers?

TRUE

Higher risk of blood clot when using 3. & 4. generation birth control pills?

TRUE

Induced abortions leading to a higher risk of breast cancer?

NOT TRUE

Higher risk of developing cancer when living near high voltage power lines?

NOT TRUE

Harnessing the best health data in the world

4
readmission avoided

Improving quality of life for COPD patients

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Challenges going forward:
- The health data is stored in silos !

- +170 national registers and clinical databases
- Relevance to 98 municipalities across 60 hospitals
- Relevance to 245 pharmacies and 3500 GP's practicing in 2100 clinics nationwide
- Architecture currently not designed for collaborative use at scale
- Focus on volume and cost - instead of value
- Existing business models protect the current system

Data Saves Lives.

Solutions

Data Map

Data Entry Point

Data Sandboxes

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National Strategy for Precision Medicine

Going forward:

Unused potentials to be explored

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Going forward:

Unused potentials to be explored

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National Digital Health Strategy
&
Strategy for Responsible Use of Health Data

Going forward:

Unused potentials to be explored

Supporting the digital ecosystem

digital hub Denmark

- Analyses to shed light on companies' **possibilities** of using health data

- Develop **solutions** to the challenges that companies and researchers experience using health data in the form of, for example, public-private collaboration models

Thank you for your attention

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