Deloitte.

NOVEMBER 2020

Vaccination programme

Contents and preparation

DELOITTE'S STARTING POINT

International starting point combined with deep insight into the Danish actors and the system landscape

- Deeply engaged in the authorities' handling of COVID-19 in a **series of countries**, including the ongoing task of preparing the **national vaccination programmes**
- Thorough knowledge of **registers within the healthcare sector**, other relevant registers and data sources as well as vast experience with **quick development of solutions** for safe handling of data and reporting
- Vast experience with **cold chain logistics** from the drug area and related areas, which is central for the implementation of the vaccination programme
- Many years of experience with **collaborating** with central actors across the Danish health services, and thorough insight into the **existing components** that quick and efficient mobilisation depends on
- Extensive experience with preparation and management of **complex programmes** where coordinated planning and execution of efforts across many types of branches and actors must be ensured.

Programme tracks

A successful and efficient vaccination programme is a result of controlled interaction between various different efforts.

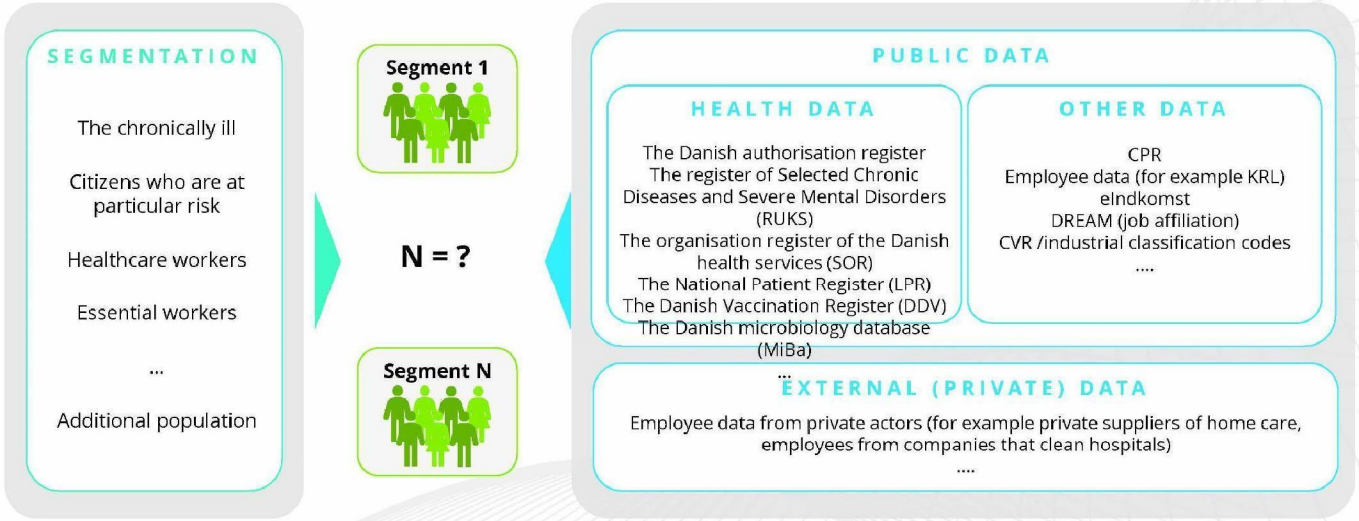
A PROGRAMME WITH EIGHT MAIN TRACKS

The full vaccination programme can be structured in a series of closely connected tracks

DATA-DRIVEN SEGMENTATION OF THE POPULATION

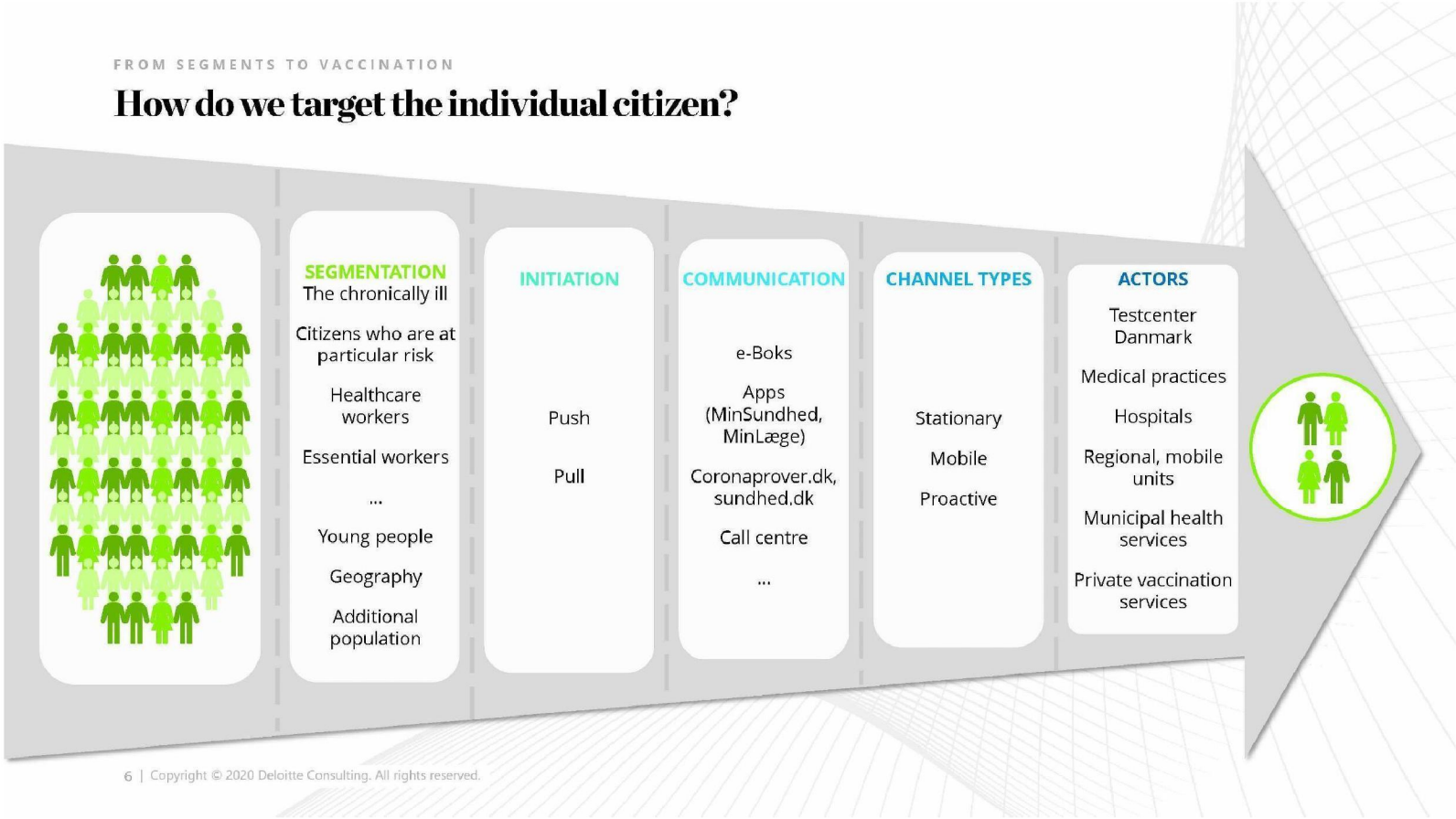
How do we identify the individual citizen? How do we determine the size of the segments?

The management of the vaccination programme must be based on clarity regarding the segment sizes and the individuals' connections to these.



FROM SEGMENTS TO VACCINATION

How do we target the individual citizen?



VACCINATION CAPACITY

How quickly can the population be vaccinated?

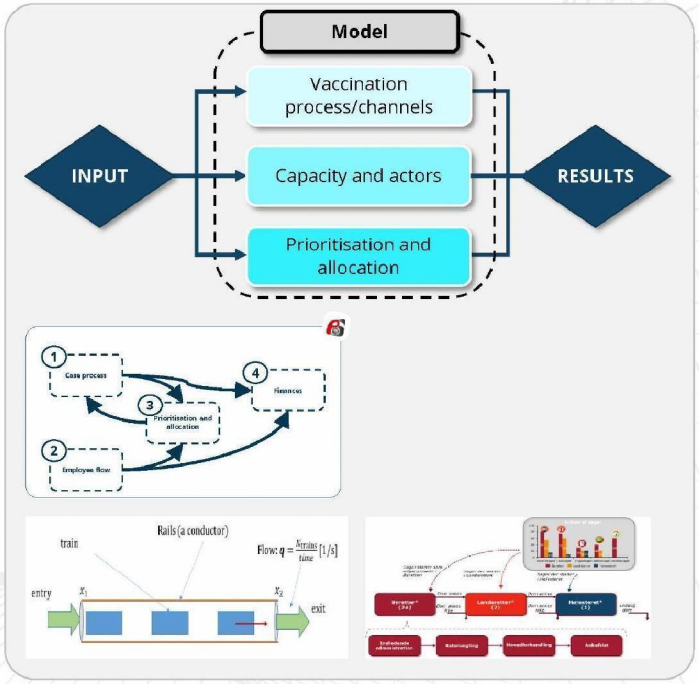
A simulation model can show us **how quickly** the various segments can be vaccinated as well as predict potential **bottlenecks** in the system, estimate **waiting time** etc. The model can also **test the robustness** of various scenarios.

The model can be used with regard to planning, optimisation, management, decisions regarding prioritisation as well as communications efforts.

Conditions that can be included in a model:

- Availability of doses over time (distributed on type of vaccine)
- Division into and prioritisation of segments
- Geographical differences with regard to reproduction rate
- Limitations in terms of logistics (storage capacity, supply chains and, especially, cold chain, multi-dose vaccines etc.)
- Administration capacity within the channels/the actors
- Defection (no show) and waste (theft/damage)
- Numbers for the effects of the various types of vaccines, including any needs for revaccination.

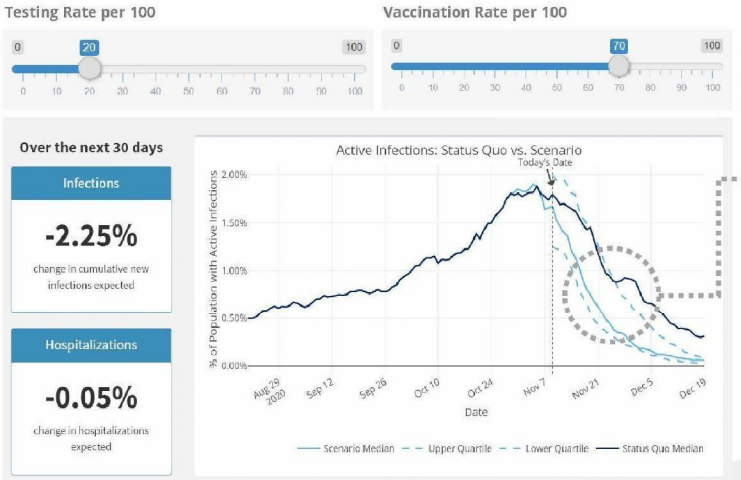
The simulation must be repeated periodically in order to follow changes within the segments as well to update assumptions.

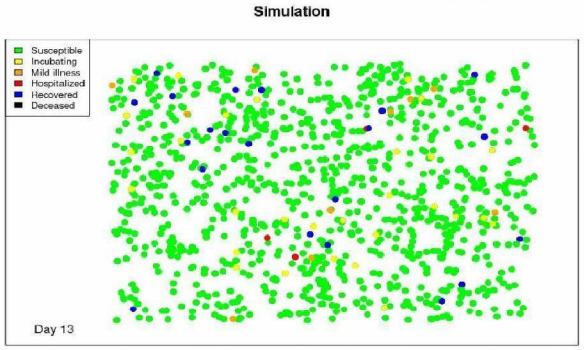


CAPACITY MANAGEMENT: DELOITTE'S SIMULATION MODEL FOR THE US

How simulation can support the continuous management of the test programmes and the vaccination programmes

D.SMaRT is a simulation model which the US authorities use to evaluate the effects of tests and vaccine distribution on the infection rate and hospital admissions. In a Danish context, a simulation of the vaccination programme might provide information for SSI's modelling.





Agent-based models *simulate the effects of testing and vaccine distribution on transmission to quantify local impacts on public health metrics.*

In the US, the model is used to support the vaccination programme by simulating scenarios regarding:

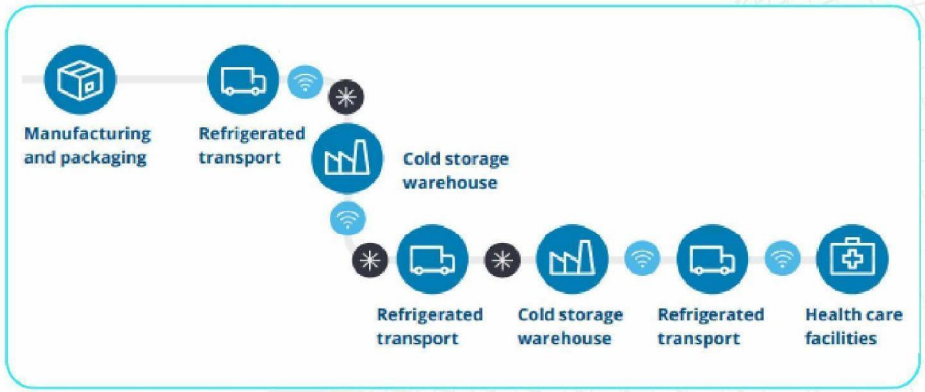
The effect of the programme, the effects of the various types of vaccines, contraindications, supply, coverage/compliance and dosage (multi-dose vaccines).

THE VACCINE'S PHYSICAL JOURNEY FROM SUPPLIER TO VACCINATION UNIT

Optimisation of logistics is the key to a quick and efficient distribution

A cohesive supply chain from central storage unit to point of use must be determined.

- Access to central storage unit(s) with the necessary cooling capacity and gearing to handle distribution
- Internal distribution agreements in Denmark
- Model for handling of vaccines in connection with mobile and proactive vaccination
- Monitoring of compliance with cooling requirements through the supply chain



Organisation

Momentum requires parallel handling of preparation, establishment and management of the various parts of the vaccination programme.

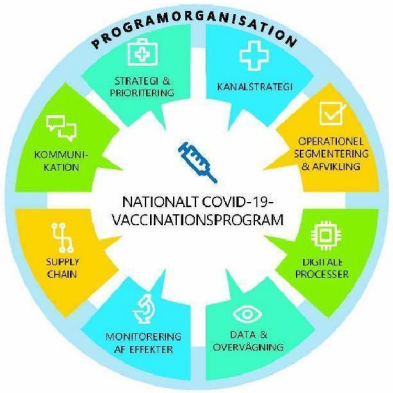
This also requires a solid organisation of the full programme.

ORGANISATION AND MOBILISATION

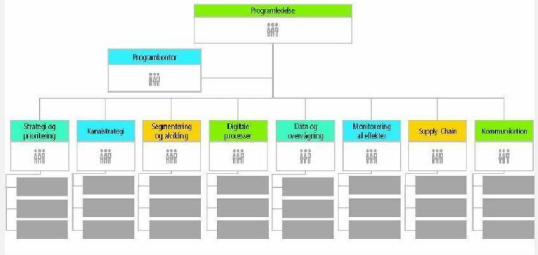
Considerations regarding programme organisation

- The complexity and the size of the vaccination task will require an actual programme organisation.
- There will be a need for secondments of significant competencies/ employees from the various actors into the programme (with appertaining mandates).
- Early establishment of a solid programme plan, including identification of dependencies, risk management etc., is needed.

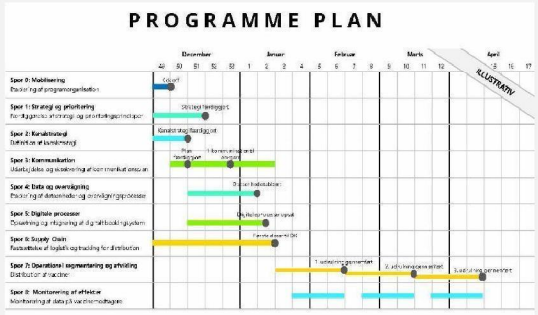
PROGRAMME TRACKS



PROGRAMME ORGANISATION



PROGRAMME PLAN



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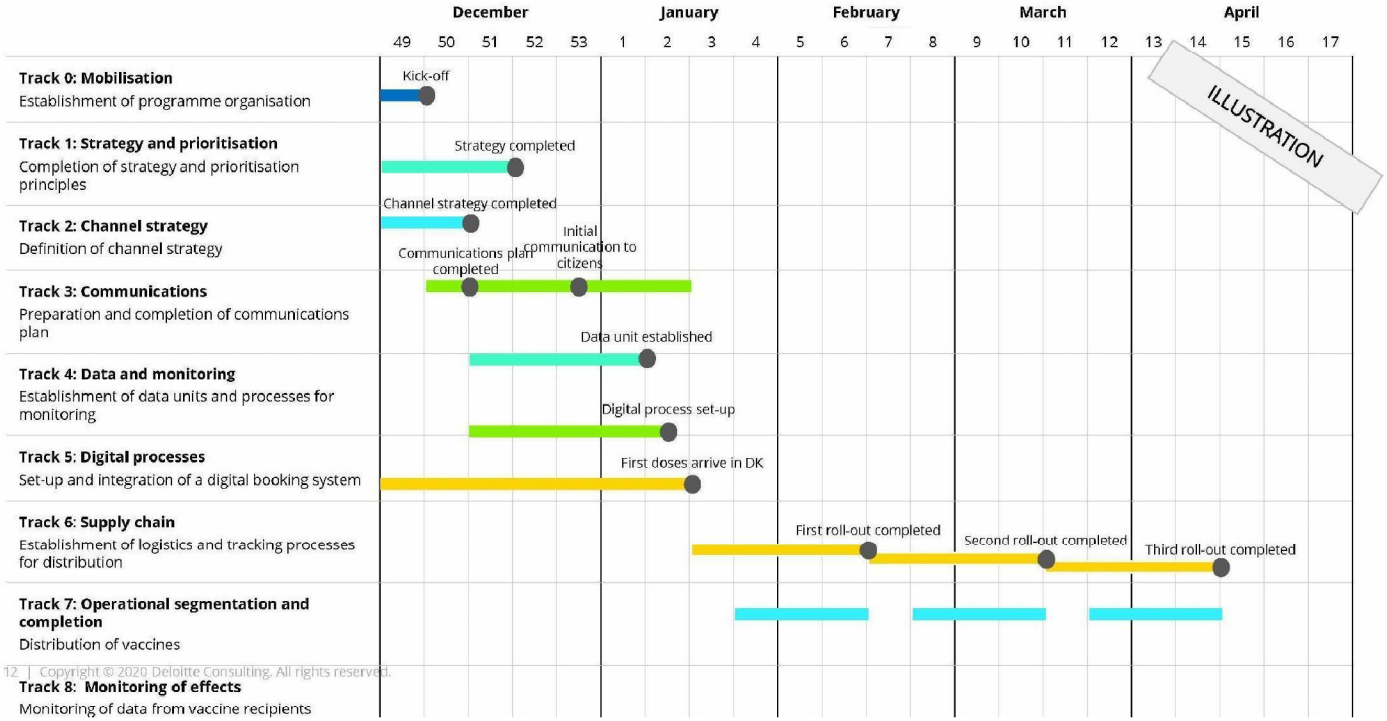
A FULL PROGRAMME PLAN

A structured programme plan is necessary for the distribution of COVID-19 vaccines

A series of the programme tracks must be executed in parallel, which means that continuous handling of dependencies is necessary.



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Thank you for your attention