

A BIGSdb-based NRC platform integrating microbial genomic, clinical and epidemiological data to strengthen the surveillance of *Salmonella enterica* in Belgium

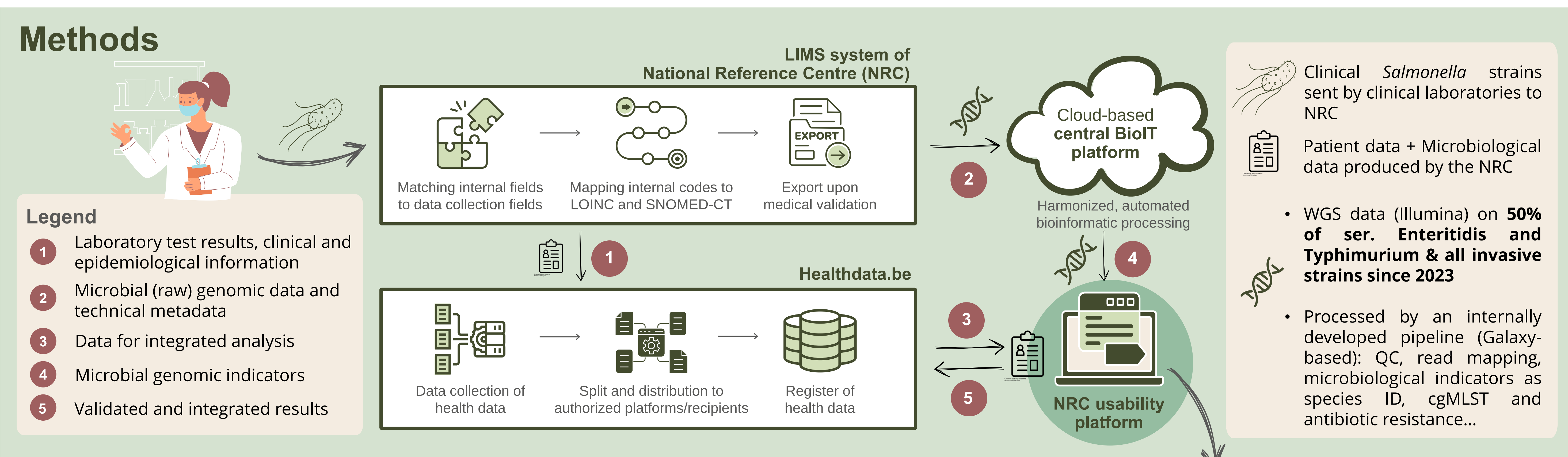
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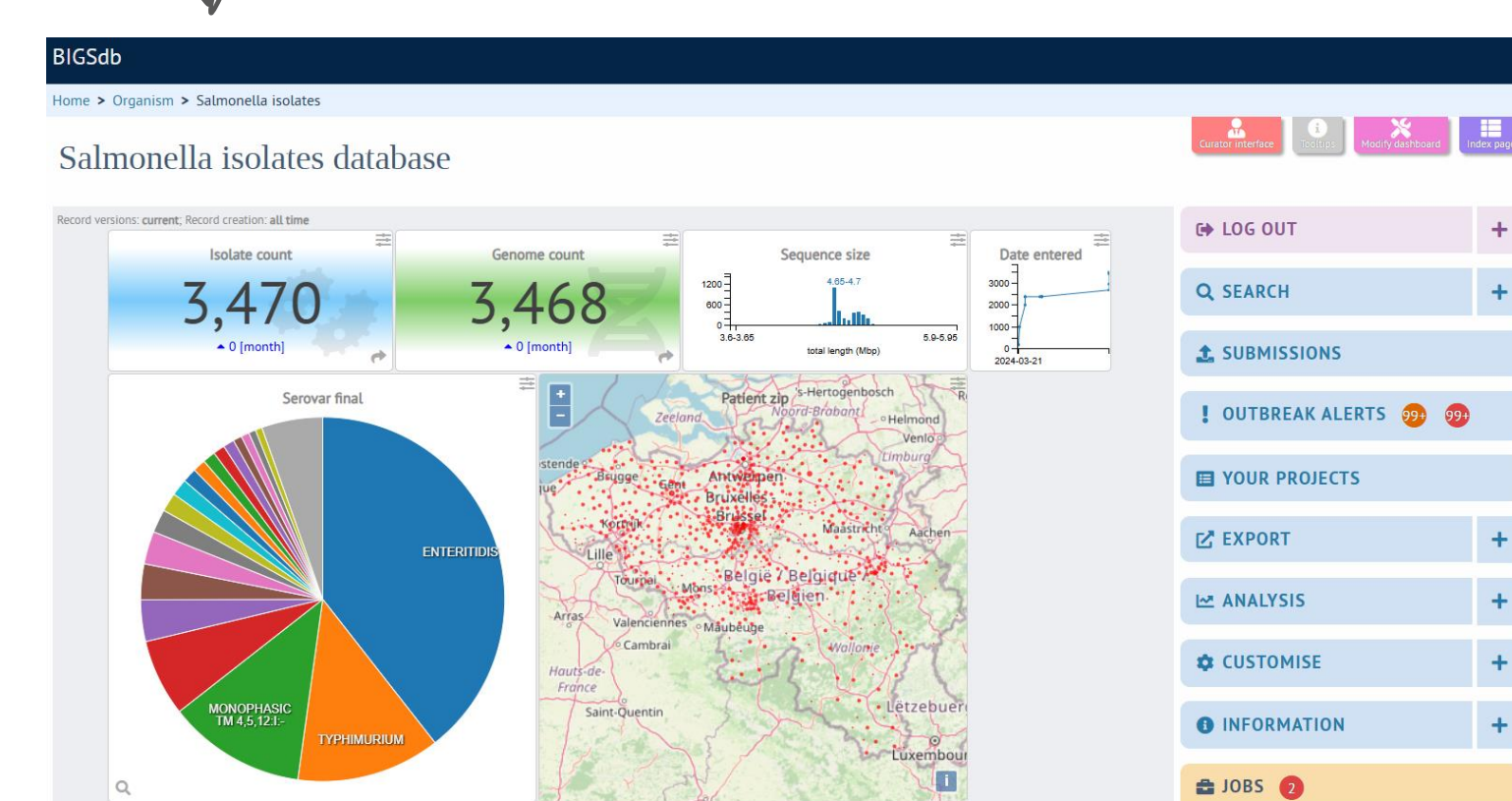
Background

be.Prepared, the Belgian Preparedness Architecture for Infectious Diseases, is a newly developed overarching Belgian infrastructure to integrate microbial genomic, laboratory test results, clinical and epidemiological data from multiple surveillance systems.

Methods

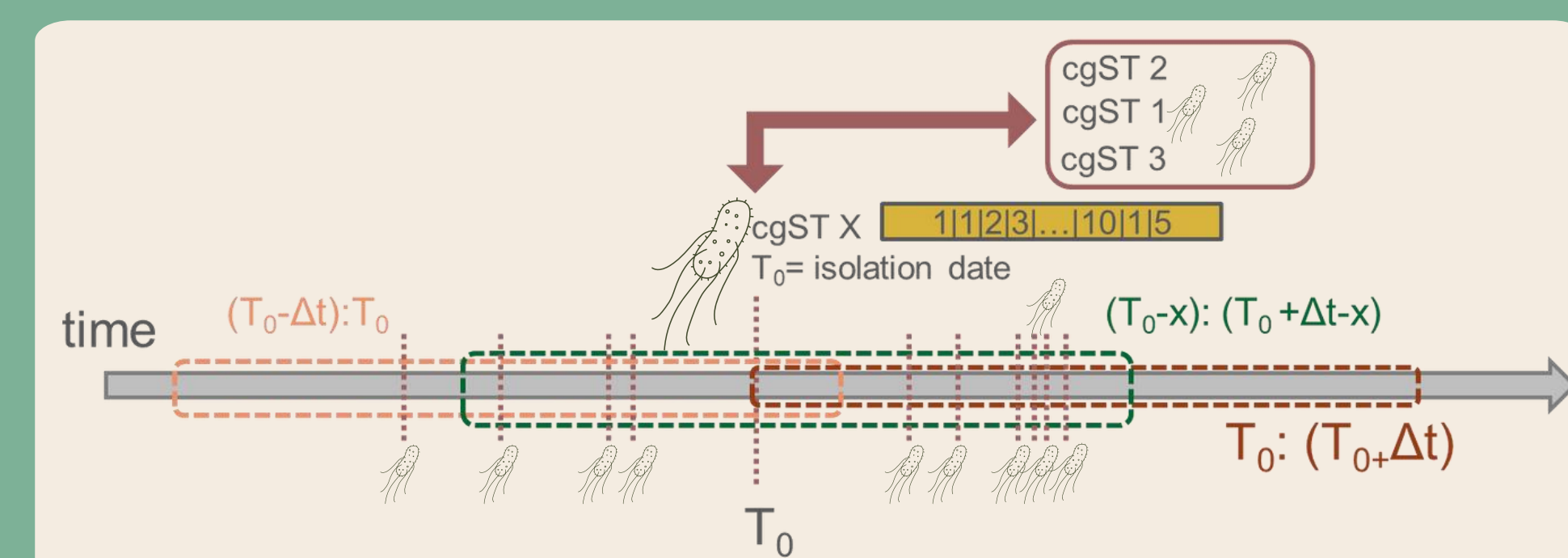


The PubMLST-BIGSdb based **NRC usability platform** was developed to support the National Reference Centre for *Salmonella* in Belgium. This platform allows **user-friendly visualization** of *Salmonella* cases by displaying **nominative patient data** and secondary **molecular and microbiological metadata**. Via third-party tools such as Microreact, the phylogeny and infections over time can be visualized, which is useful for **outbreak investigations**.

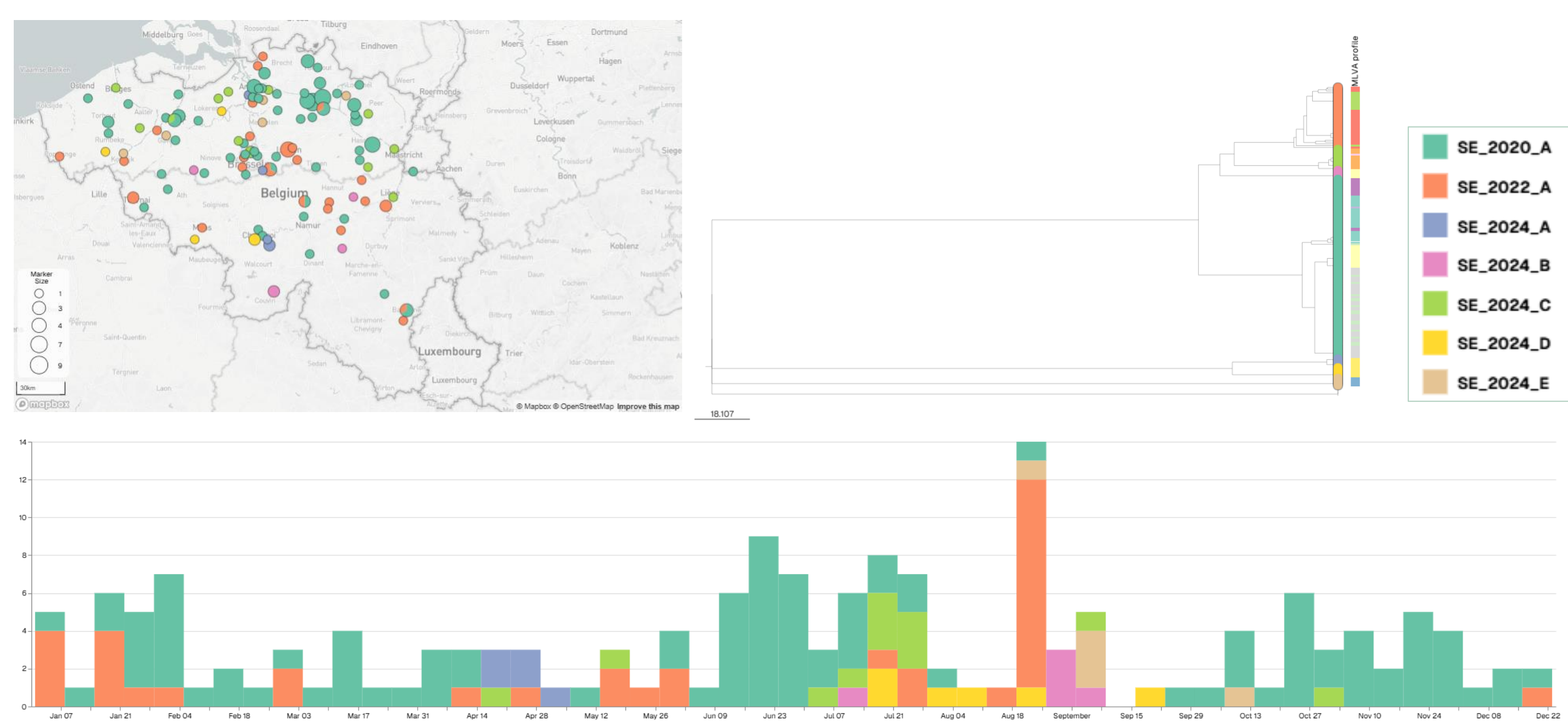


Results & Discussion: Cluster detection for *Salmonella* data 2024

- Core genome MLST (cgMLST) on WGS data using the EnteroBase scheme
- Automated alerts are generated for a cluster of minimum 5 *Salmonella* strains (N), within a 2-months time frame (Δt) and threshold of max. 5 allelic differences (n).
- The integrated tool 'Microreact' for the visualization of the phylogenetic trees, geographical spread and epidemiological curves.

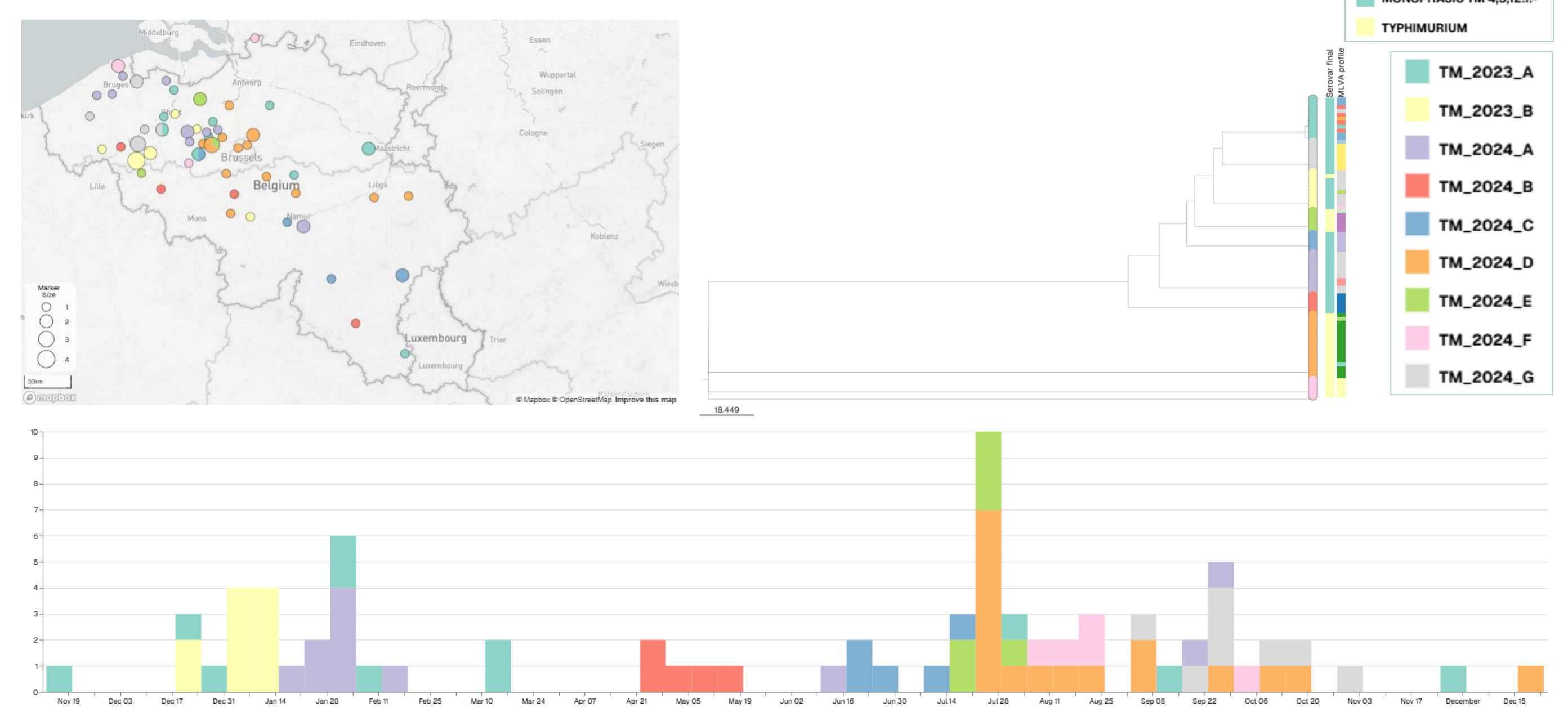


Cluster alerts for ser. Enteritidis



- 2 large endemic clusters:
 - **SE_2020_A**: first alert in 2020, but peak in 2024-25 (+100 cases in 2024, linked to eggs)
 - **SE_2022_A**: peak in 2022 linked to laying hen farm, but continuous cases (and alerts) in 2023-25
- 5 small clusters:
 - 5-15 confirmed cases

Cluster alerts for ser. (Monophasic) Typhimurium



- 3 small clusters of Typhimurium:
 - 5-18 confirmed cases
 - TM_2024_D, TM_2024_E, TM_2024_F
- 6 small clusters of Monophasic Typhimurium:
 - 5-11 confirmed cases
 - TM_2023_A & TM_2023B: First alert in 2023 (equally small numbers)

Acknowledgements

The project HERA-BE-WGS for the development of be.Prepared is granted under the EU4Health Programme (action EU4H-2022-DGA-MS-IBA-1) with the Grant Agreement no. 101113063. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HaDEA. Neither the European Union nor the granting authorities can be held responsible for them.