

Establishing Next Generation sequencing Ability for Genomic analysis in Europe - ENGAGE

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Objective

To establish collaboration between the public health, food and veterinary sectors across the European Union for building and enhancing the use of real-time whole genome sequencing and analysis in food safety and public health protection

The project will implement two joint proof of concept projects to investigate

- Bacterial evolution and genetic diversity driven by genetic exchange, selection and clonal expansion
- Epidemiological relationships between the target pathogens
- Identification of biologically successful clones
- Determinates of virulence, antimicrobial resistance and other putative markers in various emerging “epidemic” strain or clones having a strong impact in Europe



Specific objectives

- Two joint “proof of concept” WGS projects targeting emerging E.coli and Salmonella lineages will be established among the consortium
- A cloud-based protected working space for sharing our genome data will be created
- Benchmarking of bioinformatic analytic tools
- Establish and conduct WGS proficiency tests
- Boost the scientific collaboration between scientists, clinicians, and risk assessors to exchange expertise and knowledge as well as to build capacity





Risiken erkennen – Gesundheit schützen



Public Health
England



Animal &
Plant Health
Agency



Istituto Zooprofilattico
Sperimentale delle Venezie



EURL AMR

GMI

ECDC FWD

COMPARE



EFFORT



EFSA network

Multi-level partnerships

- A multi-level partnerships will be established to include all other interested parties such as
 - The EURLs
 - The NRLs from the food and veterinary sectors involved in the EURL AMR networks
- Code of Conduct will be established to ensure Outside Users access to the cloud-based protected working space for sharing our genome data



Pathogens

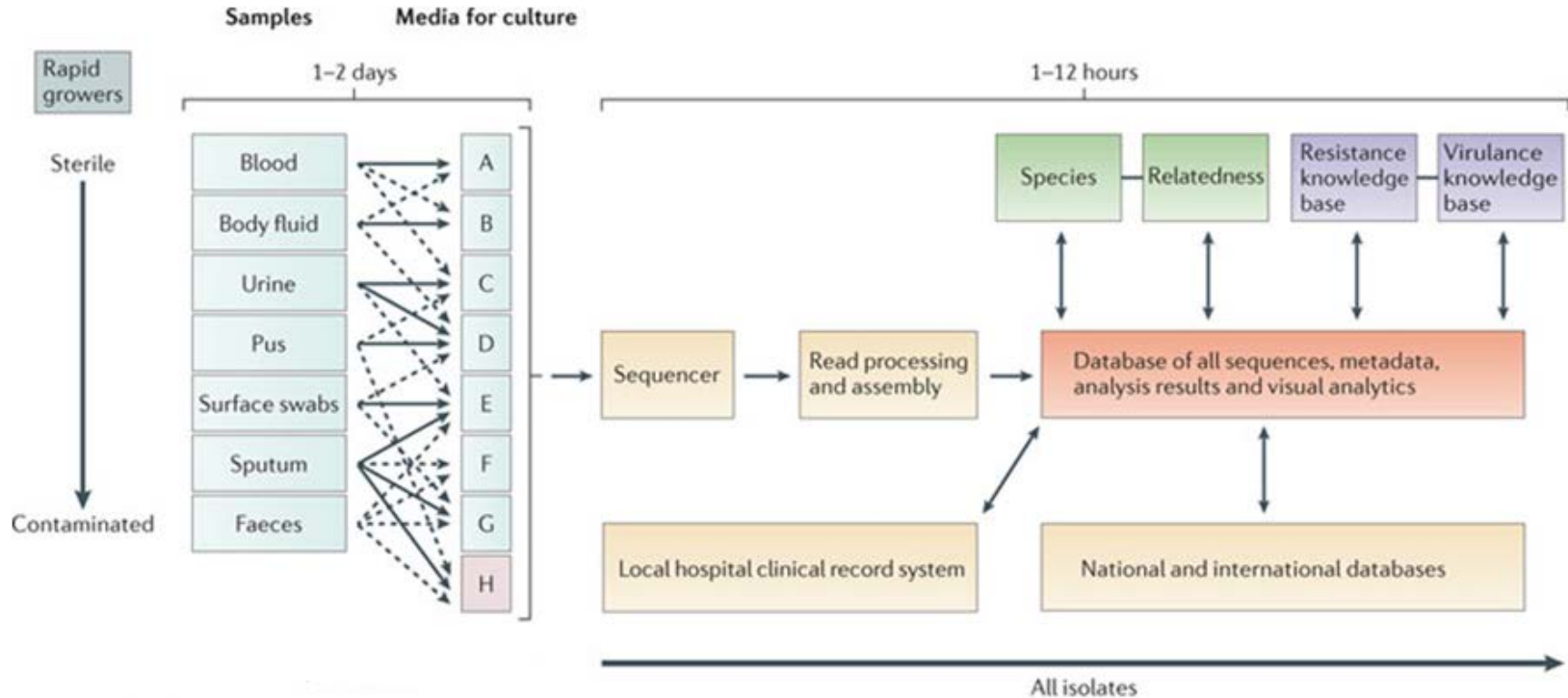
The ambition is to provide a proof of concept for generating and in real-time sharing and comparing WGS data from *Salmonella* and *E. coli* between sectors and countries

The primary target sub-types would include

- AMR commensal *E. coli* and *Salmonella* including ESBL, ampC, carba, colistin etc. for clonality and transmission studies
- *S. Infantis*, susceptible and resistant for clonality studies
- *S. Enteritidis*, susceptible and resistant for clonality studies
- Epidemic *S. Kentucky*, *S. Infantis*, *S. Stanley*, *S. Heidelberg*, *S. Rissen*, *S. Paratyphi B java*, *S. Mbandaka*, *S. Saintpoul*, *S. Newport*, *S. Derby*, Monophasic *S. Typhimurium* for clonality and transmission
- Rare *Salmonella* serovars for benchmarking of serotyping NGS tools

But needs to be kept **flexible and opportunistic** to target future emerging sub-types


A minimum of 3,000 strains / genomes will be collected and sequenced through the daily routine and the national / EU monitoring programs including also historical strains



Cloud-based protected working space for sharing

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ENGAGE







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Username
shinny

Password
.....




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Browser support    

Created by: [Jose Luis Bellod Cisneros](#)


Cloud-based protected working space for sharing

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Metadata



Sheet




Info

✓ Metadata validated!

Sample Name	File Names	Pre Assembled	Sequencing Platform	Sequencing Type
DTU2016-197-PRJ1054-Es...	DTU2016-197-PRJ1054-Es...	no	Illumina	paired
DTU2016-198-PRJ1054-Es...	DTU2016-198-PRJ1054-Es...	no	Illumina	paired
DTU2016-199-PRJ1054-Es...	DTU2016-199-PRJ1054-Es...	no	Illumina	paired
DTU2016-200-PRJ1054-Es...	DTU2016-200-PRJ1054-Es...	no	Illumina	paired
DTU2016-201-PRJ1054-Es...	DTU2016-201-PRJ1054-Es...	no	Illumina	paired
DTU2016-202-PRJ1054-Es...	DTU2016-202-PRJ1054-Es...	no	Illumina	paired

Total Items: 52



Sequences

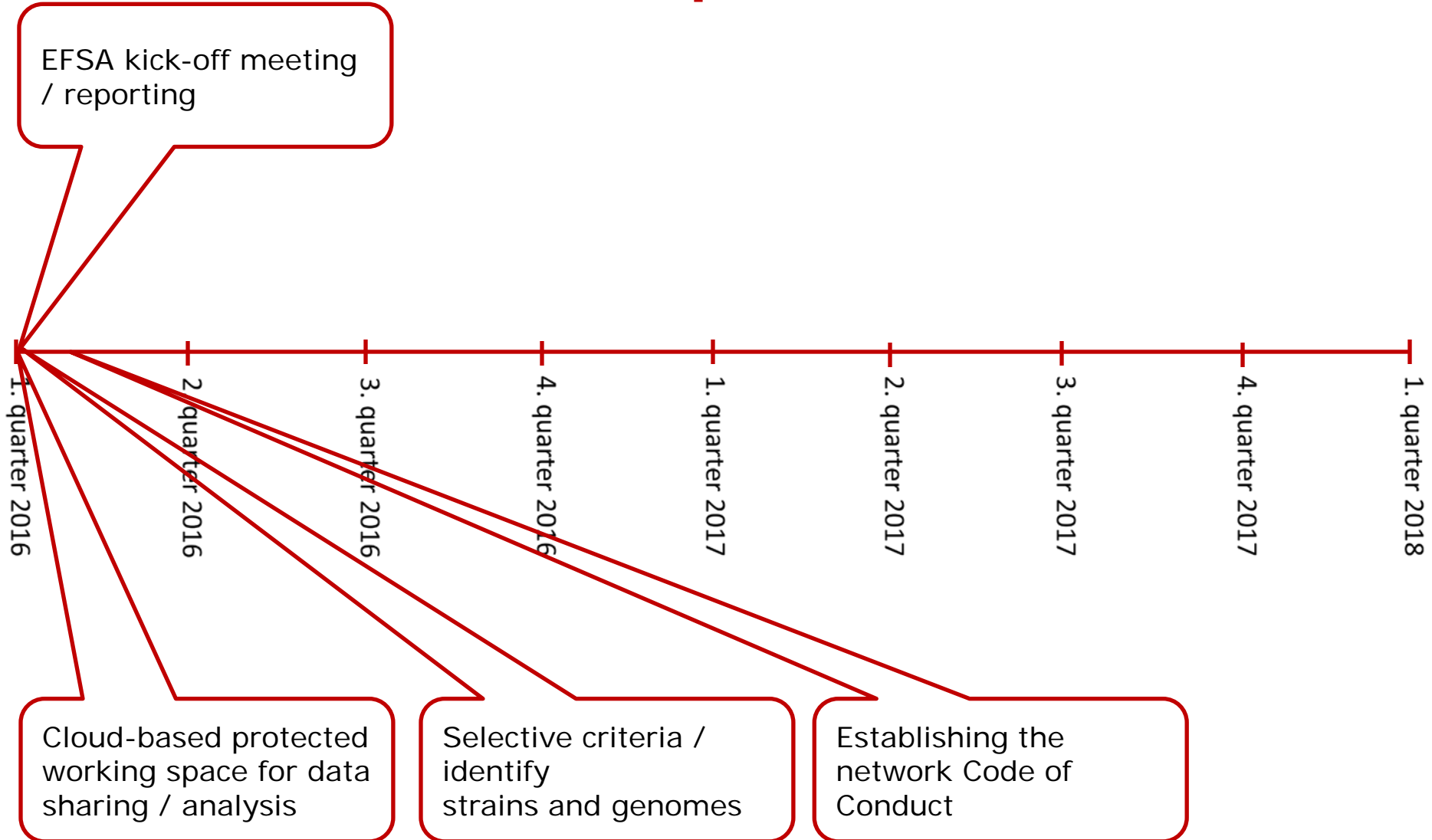
Boosting scientific cooperation

- ENGAGE will in real-time over two years period ensure an active collaboration between highly experienced and less experienced partners
- To ensure exchange of expertise and dissemination of knowledge the following activities will be initiated:
 - Annual workshops
 - Annual training courses
 - Twinning projects for the consortium, affiliated partners, and target groups
 - Comprehensive outreach
 - E-learning modules

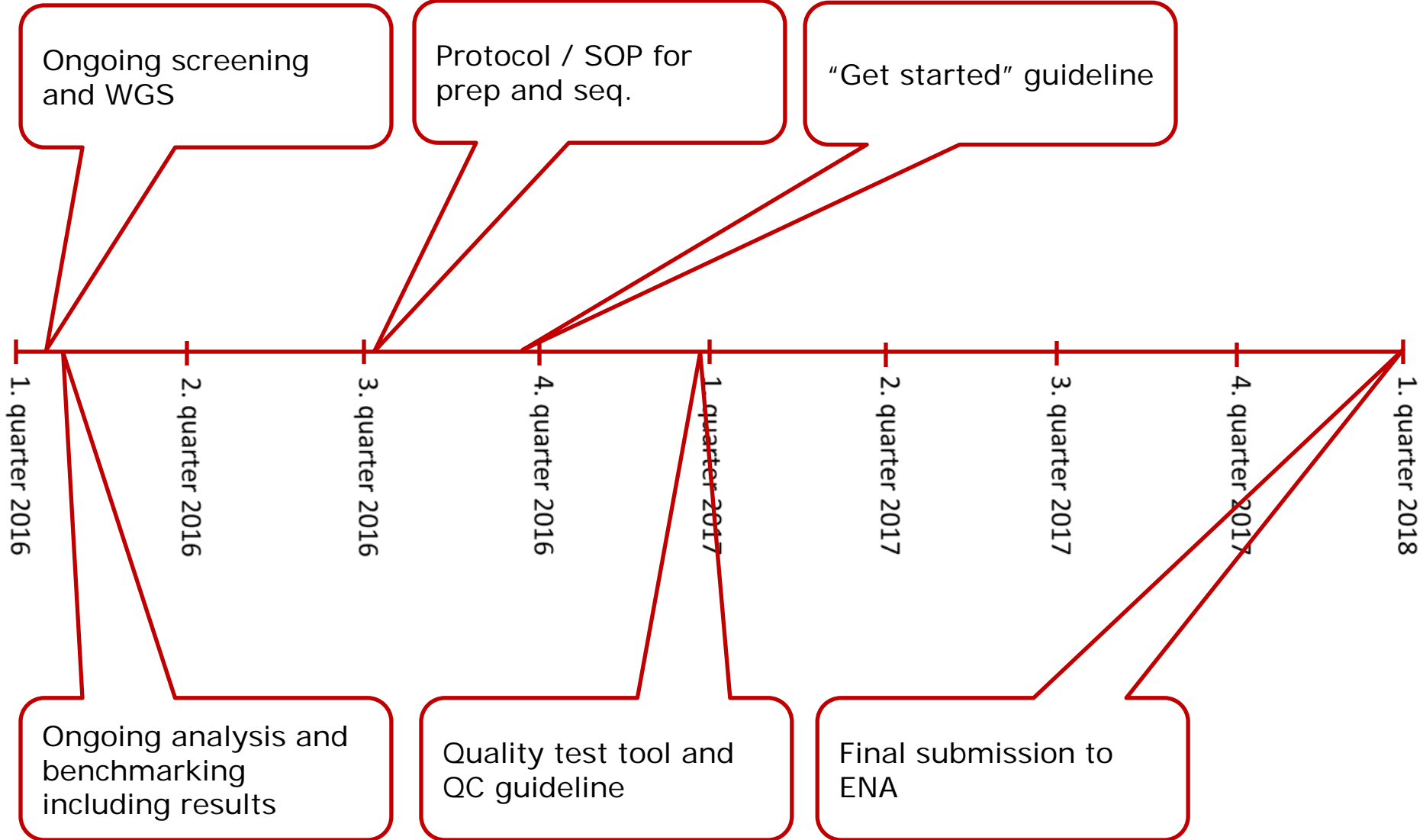


Time line

Kick-off phase

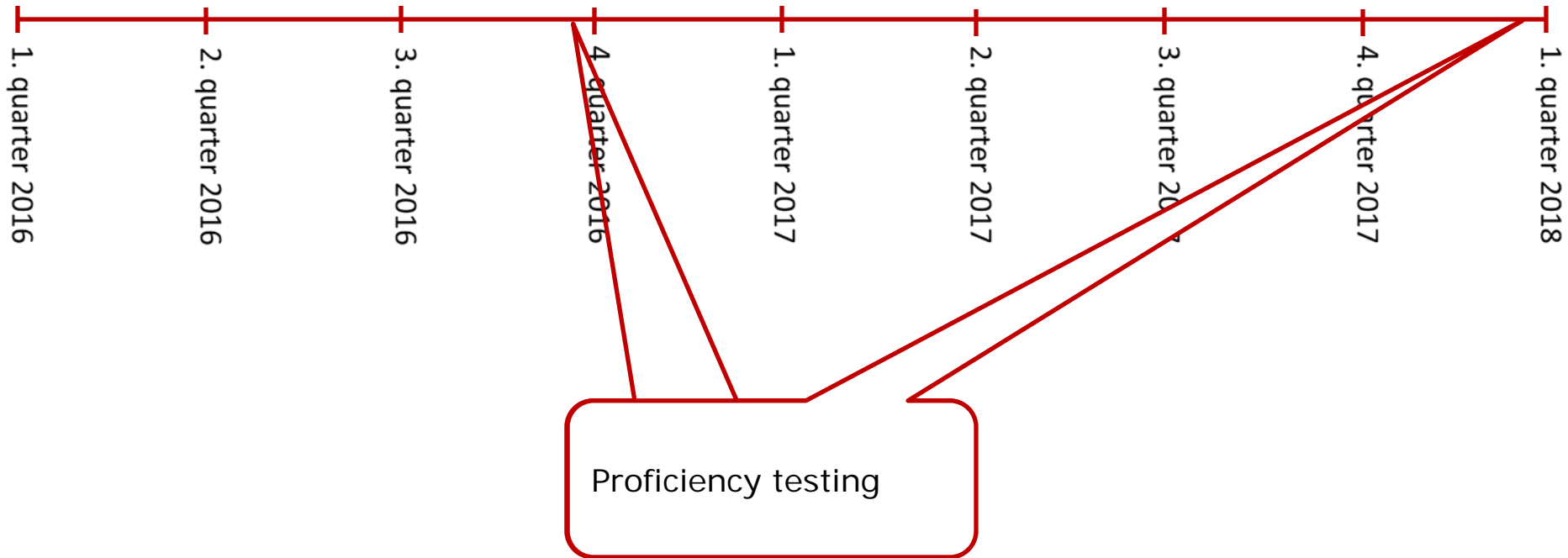


Time line Analytic phase



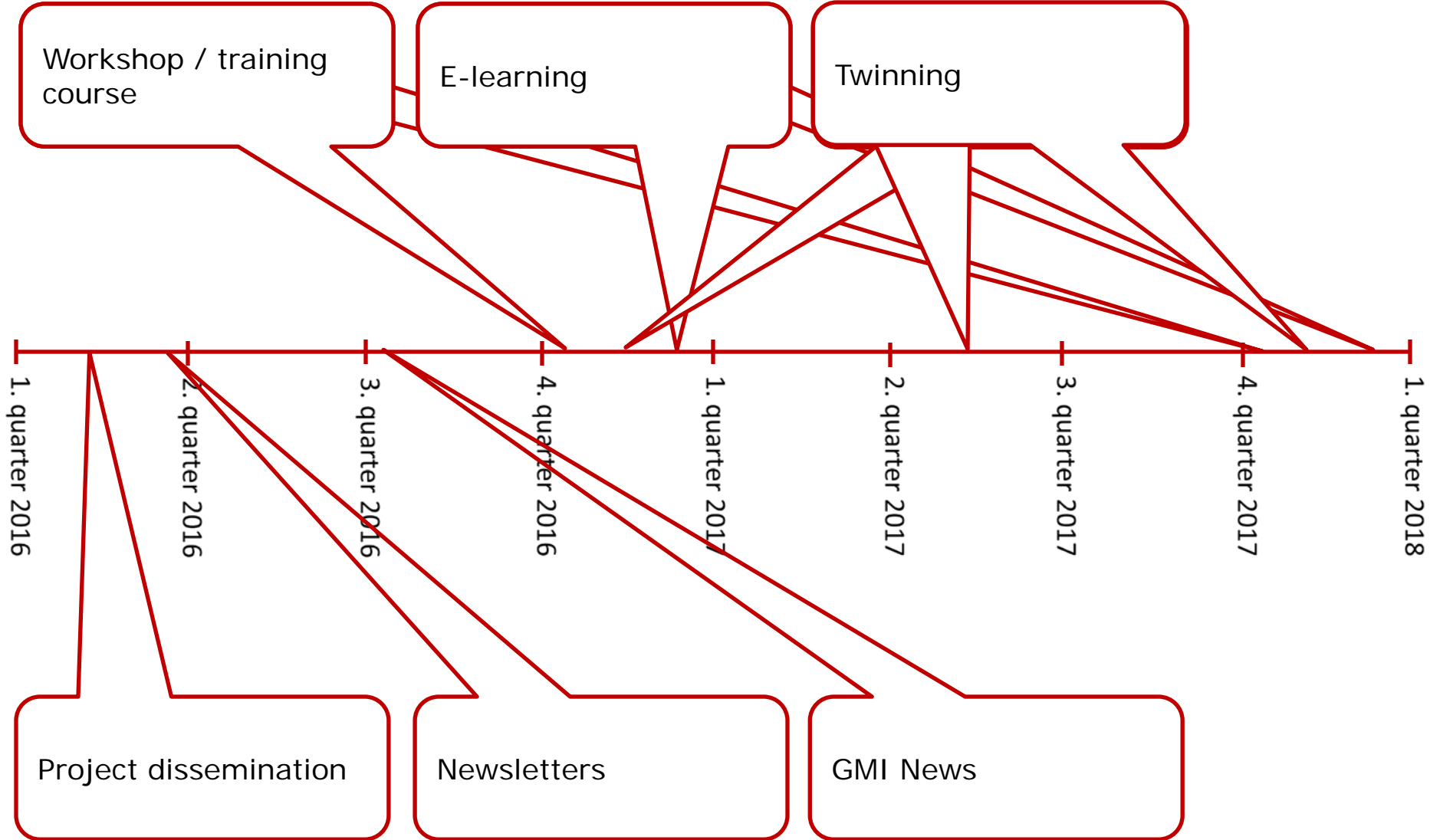
Time line

Proficiency testing phase



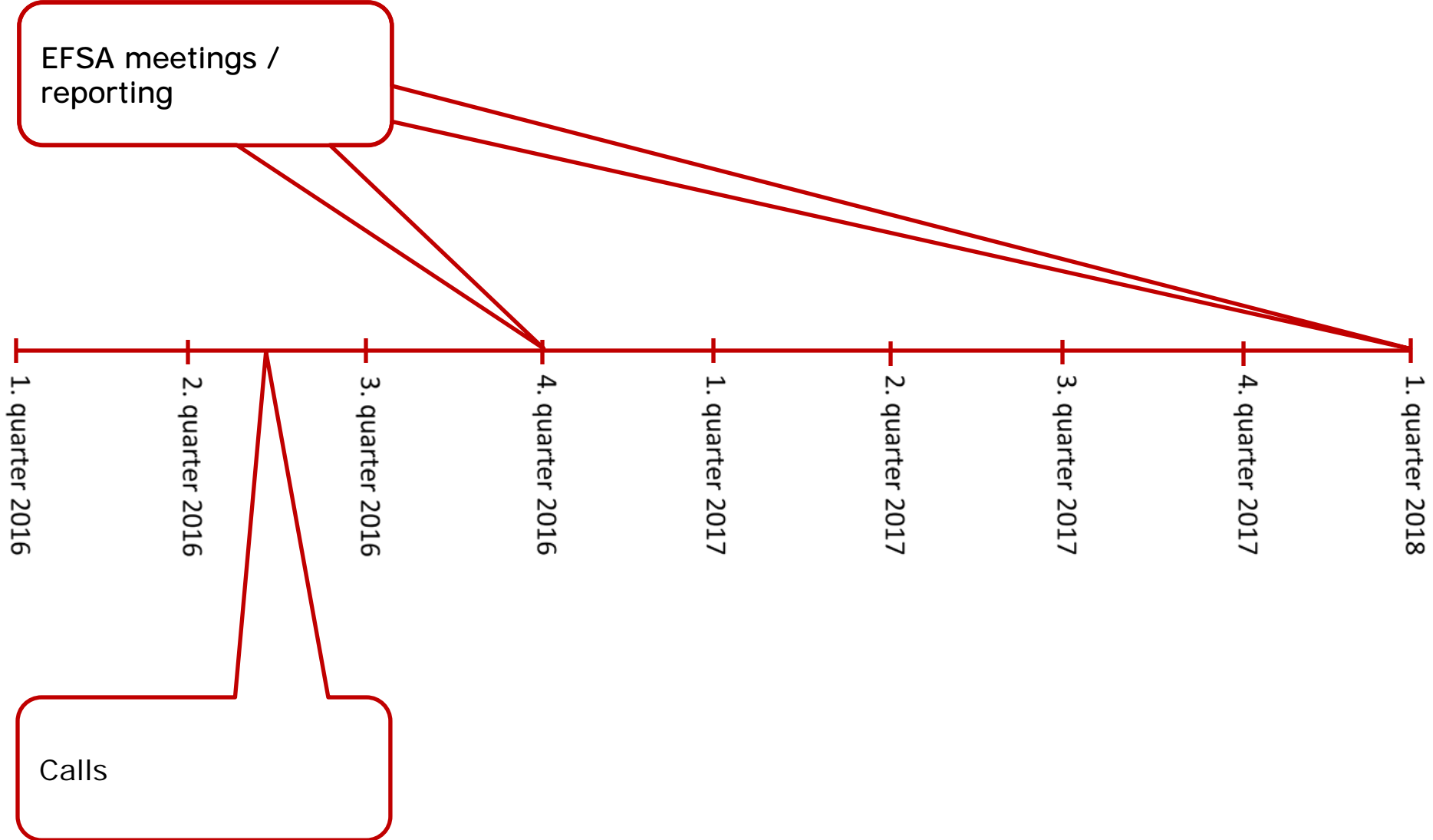
Time line

Boosting scientific cooperation phase



Time line

Administrative phase



Thank you for your attention

