1. What does relative and absolute freedom mean?

The sensitivity of a surveillance component or surveillance system to demonstrate freedom from disease is measured against the design prevalence. The following two situations arise:

- **Scenario A:** No positives are found. Hence, it can be concluded that disease is not present at a level equal to or higher than the specified design prevalence.
- **Scenario B:** Positives are found, but they do not exceed the specified design prevalence.

In few cases, based on OIE or other definitions (e.g. TB, BHV1) Scenario B is called 'officially free'. However, this statement only relates to politics and regulations, but has nothing to do with surveillance or statistics. Disease freedom is a *probabilistic statement* on the level of confidence achieved so that the distinction between absolute and relative freedom does not make sense. When surveillance detects (true) positive cases, the population is clearly not free, but infection is known to be present. On the other hand, when surveillance does not detect (true) positive cases, disease could still be present at a lower level than the design prevalence. Moreover, given that tests are generally imperfect absolute freedom can usually not be demonstrated with absolute certainty, so that the term 'absolute freedom' would be misleading.

If positive cases are known to exist, but do not exceed design prevalence, and this is accepted as official freedom, then the framework user should think about the mitigation stage to determine the surveillance objective of individual components:

- Sustainment, i.e. low-level prevalence is accepted > surveillance objective: early detection (see FAQ 2.6 of the terminology working group)
- Investigation, e.g. distribution of infected herds shall be further investigated to inform implementation measures > surveillance objective: prevalence estimation
- implementation, i.e. measures are taken to achieve total eradication > surveillance objectives: case detection

Calculators to estimate the sample size to demonstrate freedom from disease should not be applied as calculations may lead to inadequate samples sizes given that positives are known to be present. Similarly, calculators to estimate sensitivity are not truly applicable as they operate under the assumption that no positives are found. Calculators to estimate the probability of detecting disease (sensitivity) however can still be applied to calculate the the theoretical sensitivity of the surveillance component / system. This theoretical sensitivity can be used to provide an indication of the effort made and thus to allow comparing different surveillance systems in low-prevelance situations. In additiona, true prevalence and 95% confidence Limits need to be calculated to allow monitoring changes in prevalence over time.