Project Work: Introduction, Template

COMPUTE RESEARCH SCHOOL COURSE NTF004F

Title: The Grand Bee Catalogue (GBEEC)

- Should be descriptive and catchy for general public

- Easy-to-remember acronym is a key

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Applicants

- Both the person (researchers, staff) and the partner institute(s)

- Good to mention previous or ongoing collaborations

- For multi-partner proposals it is beneficial to have non-identical partners (complementarity of partner profiles)

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Short summary

- The <u>Grand Bee Catalogue</u> is the most ambitious BEE survey to be done ever.

  – The Experiment aims to develop a specialised next generation BEE data harvestor, a special sensor that will perform a full 24x7 surveillance of a BEE hive collecting all sort of data.

  – The Experiment will deploy thousands of those harvestors all over the world

  – All the DATA will be collected in dedicated distributed/centralised data centers, labelled, curated according to the FAIR principles

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Scientific justification

- BEES are the world's most **important** pollinator of food crops. It is estimated that one third of the food that we consume each day relies on pollination mainly by **bees**.

- BEES are in danger....

- Robot pollinators .....

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Description of the Infrastructure

- Sensors: technology, energy need, (remote-)maintenance, field work (e.g. deployment) data volumes, environmental impact

- Network: technology, topology, bandwidth, reliability

- Near-sensor-experimental-stations (NSES): field stations taking care of storing (raw-data pre-processing or filtering?) data generated by a set of sensors.

- Data centers: data model, data volumes, sturcturing the experimental data, associated computational needs...

- Required manpower: type of expertise, workload

- Security: protection against data tampering (data integrity)

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Users & accessibility

- beekeepers

- sensor operator

- IT staff

- Scientists (computer scientist, mathematicians, ecologists, ...)

- Project managers

- Funding agency representatives

- General public

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Data management

- Sensors estimated to generate 10 MB per day, that is uploaded to the NSES via radio link

- NSES will aggregate data from 100 hives maintining a local data cashe/buffer of 5 TBs on regular disks.

- Disks containing one-months of data are transferred to nearest Data Center by a eco-friendly courier service

- Collected BEE DATA is to be stored at least 10 years after the end of the project...

- Project researcher will work on the DATA collected in the DC to be ready for further access.

- External Researchers will have access to (part) of the data stored in the data centers

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Similar Infrastructure

- There is a smaller scale experiment monitoring Elephants tracks in Africa:

    – Fewer number of individuals to keep track

    – Lower-level resolution sensors

    – But: sensors are more prone to damage

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Placement

- Both the experimental devices and the Data Centers...

- Technology experts are needed

- This part of the proposal always very political that can overwrite technical considerations

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Budget

- The challenge is not to estimate a certain cost category but make sure NOT to overlook some possible expense source. Therefore try to list everything that can generate cost for the experiment.

- As an Example, the GBEEC budget would contain at least:
    - Sensor manufacturing
    - Data center costs
    - Transport costs
    - Network costs including initial test
    - Farmer compensations

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