Fast Inverse Nanomaterial Characterization (FINCH)

- **TOPIC**: *DT-NMBP-08-2019*

- **PROJECT:** Fast Inverse Nanomaterial Characterization (FINCH)

- **AIM**: Development of a synergetic nanomaterial characterization technique based on the combination of structured and unstructured data using experiments, nanomaterial characterization, numerical simulation, optimization technique, model reduction and big data.

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ADVANCED MATERIAL SIMULATION

treelogic

IK4 TEKNIKER
Research Alliance

Fast Inverse Nanomaterial Characterization (FINCH)

- **IDEA**: To develop a real time processing new characterization technique to determine macro and micro nanomaterial properties.
- The core of the technique combines experiments, nanomaterial characterization, numerical simulation, optimization techniques, big data and model reduction to determine the optimum material properties or material structure.
- The technique is applied sequentially to macro data to determine macro properties and, in a second phase, to macro properties and micro data to obtain nano properties.
- Model reduction combined with big data techniques gives the speed and reliability necessary in industrial applications
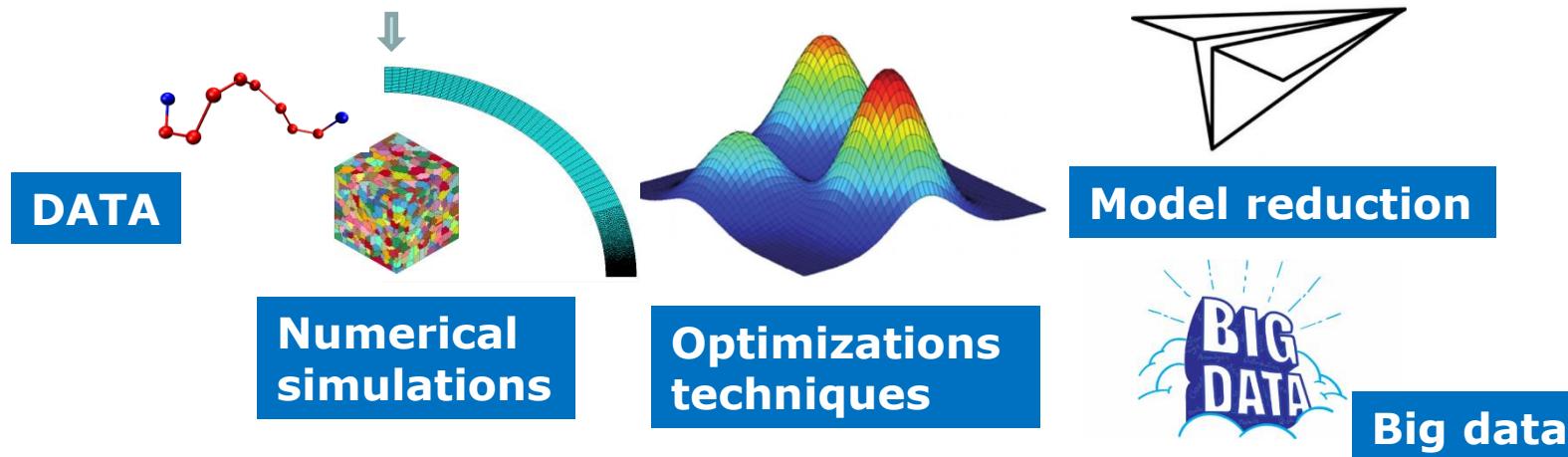
DATA

Numerical simulations

Optimizations techniques

Model reduction

Big data
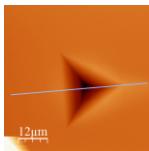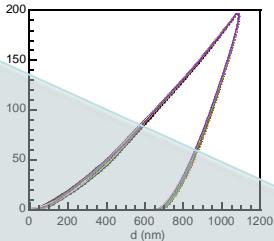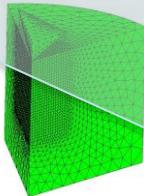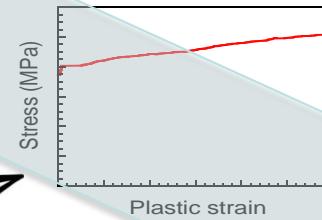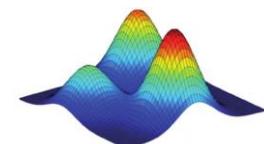
Fast Inverse Nanomaterial Characterization (FINCH)

- **IDEA**:

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- **IDEA**:

Material characterization

Product

Nanomaterial properties

Material optimization
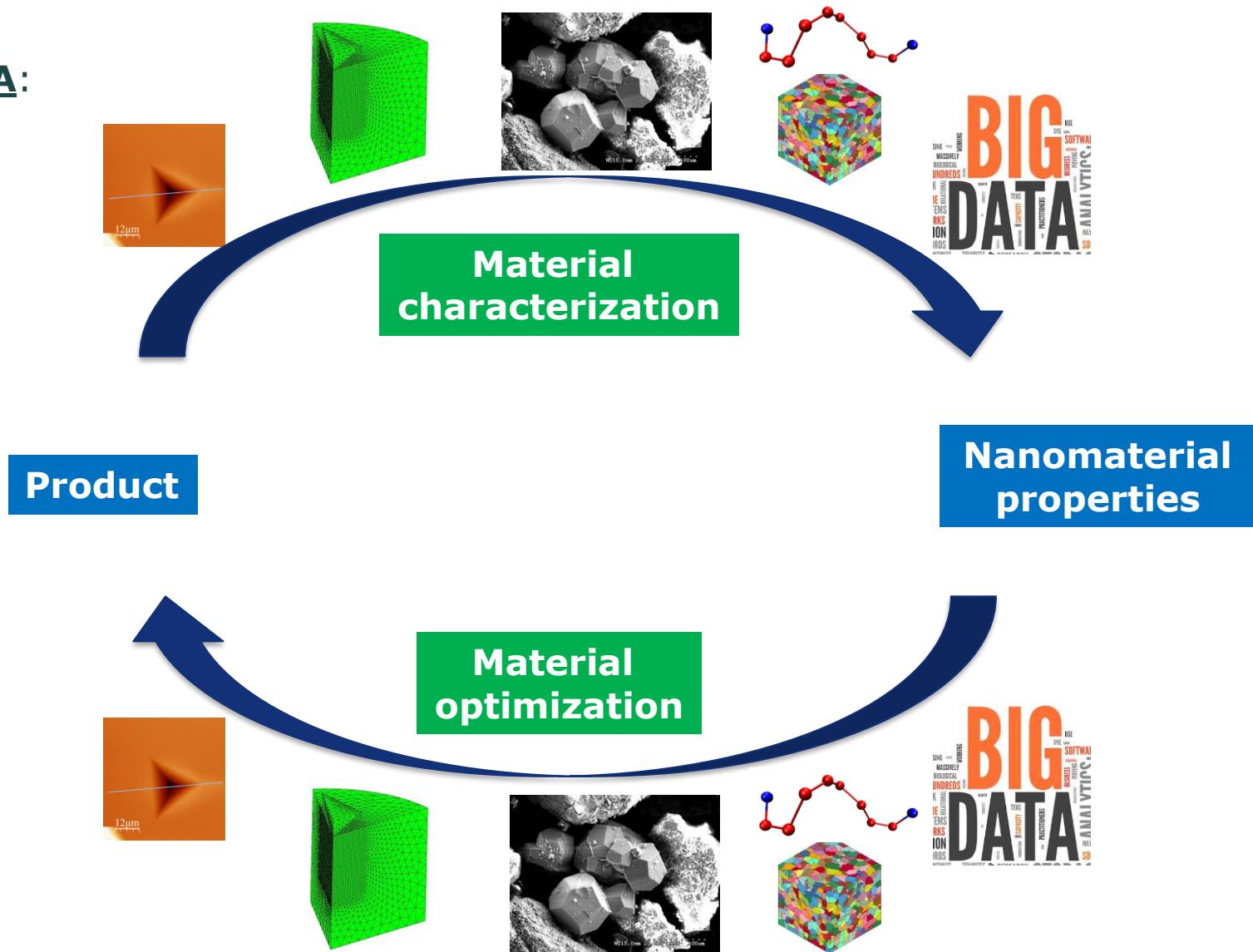
Fast Inverse Nanomaterial Characterization (FINCH)

- **OBJECTIVES:** To develop a new fast procedure for multiscale material characterization.

- **RESULTS:** TRL 6

- **IMPACT:** The new procedure permits to reduce the time necessary to evaluate macro and nano properties.

  Big data, model reduction and optimization techniques give the reliability necessary in industrial applications

  The methodology increase the use of multiscale modelling and atomistic software will be hosted in the industry

Fast Inverse Nanomaterial Characterization (FINCH)

- Existing partners:
  - ADVANCED MATERIAL SIMULATION (AMS): Translator
  - TREELOGIC: Big data
  - IK4-TEKNIKER
  - Nanomaterial testing
  - Materials modeller
  - ……………………………
  - End users – industrial partner

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