

# The ESERNET thematic network on Experimental Software Engineering

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**ESERNET**, Experimental Software EngineeRing NETwork, is a thematic network on experimental software engineering in Aug. 2001 - July 2003. ESERNET is supported by the European Union's 5<sup>th</sup> Framework program, and is lead by IESE in Kaiserslautern (D). The project responsible is Prof. Dieter Rombach, with project manager Dr. Christian Bunse. ESERNET has five other founding members (partners): Sodalía in Trento (I), VTT Electronics in Oulu (FIN), NTNU in Trondheim (N), Blekinge Institute of Technology - BTH in Ronneby (S), and ESI in Bilbao (E). ESERNET has 23 other participating members, mostly industrial and including three outside Europe. Many of the partners and members already work together. The website [www.esernet.org](http://www.esernet.org) contains a portal to the field, a competence center of methods, and a knowledge base of executed empirical studies.

## **ESERNET goals:**

- Establish an infrastructure for a collaboration network.
- Evaluate software engineering practices and package the gained experience for reuse.
- Use Experimental Software Engineering methods to facilitate the systematic introduction of new practices.
- Accelerate community-wide learning in software engineering.  
Foster collaboration and knowledge exchange within and between industry and research. Create synergy from existing projects, networks, and organisations. .For instance, ESERNET cooperates with initiatives like CeBASE in USA, Visek in Germany, and INTER-PROFIT in Norway.
- Initially focus on inspections, testing, object-orientation, and CBSE.

**ESERNET has six workpackages (WPs):** WP1 Project Management and Coordination (IESE coord.), WP2 Experimental Methods in Software Engineering (BTH), WP3 Coordination of Experiments (VTT), WP4 Software Engineering Knowledge Repositories (IESE), WP5 Internal and External Exploitation (Sodalía), WP6 External Dissemination (NTNU).

ESERNET foresees three kinds of *empirical studies*: *post-mortems* (often in industry), *controlled experiments* (e.g. using students), and *industrial studies* (e.g. real case studies in industry). The term *Experimental Software Engineering (ESE)* covers six phased activities, numbered 1-6:

- 1-3. *Characterise/define/plan*: Make an explicit improvement goal and a plan to try out some new process or technique.  
Extra training may be given and measurements planned.
4. *Operate (do)* the study, observe the effects, and collect the specified data.
5. *Analyse/interpret* the results: analyse and generalise.
6. *Present/package*: package and disseminate results for reuse, e.g. on web/experience base.

**What you get from ESERNET for your company:**

- A framework for gradually and systematically trying out new processes/technologies.
- Help to plan empirical studies and to coach your developers in actual software techniques.
- Work together with other partners on related fields and empirical studies.
- Participate in open workshops and experience fora, usually every 4-6 months. Especially smaller companies can benefit from this.
- Receive relevant material through internal working groups and newsletters (via web/mail).
- Generally be informed about ESE activities, via the web portal in [www.esernet.org](http://www.esernet.org).

Note: It is *not* part of ESERNET to fund empirical studies in individual companies etc. Such studies should be sponsored by each member organisation internally. ESERNET can provide assistance in planning and *coaching* (typically two person-weeks), in analysing empirical studies, and in *packaging* and disseminating results.

**Some relevant types of empirical studies in ESERNET (not inclusive list):**

**Post-mortem analysis (P)**

- P1: Examine previously published studies (Literature search).
- P2: Examine qualitative data from completed projects from industrial members, as lessons learned (**Legacy data, data mining**).
- P3: Examine structure of products from industrial members (Static analysis).

**Controlled experiments (C)**

- C1: Investigate some technology in an artificial setting (**Synthetic**), 1<sup>st</sup> time.
- C2: Repeat an experiment in a different context/project (**Replicated**), later.

**Industrial studies (I)**

- I1: Collect development data (Project monitoring, **Case study**) – *most common*.
- I2: Use ad hoc validation techniques (Assertion).
- I3: Monitor multiple projects or do multiple/deep case studies (Field study).
- I4: Investigation in a population on some topic, by phone/questionnaires (**Survey**).

The pattern of investigation in ESERNET is to gradually refine empirical studies, as illustrated below:

