Jožef Stefan Institute

Session 2
Distinguishing Re-Co from Energy Audits and Retrofits

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Cyprus Energy Agency

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Our common challenge

- **Reduction of energy consumption** in buildings is a vital element in the long-term transition towards carbon neutral society
- **The house is a machine for living in!** (Charles-Édouard Jeanneret, better known as Le Corbusier)
- It is not dehumanisation, it simply means that the **establishment of performance standards becomes necessary element of modern living**
- … When you can **measure what you are speaking about, and express it in numbers**, you know something about it … (Lord Kelvin)
- **Are there universally applicable solutions?**
- **Context of energy use!** It is not possible to expect successful implementation of the initially defined energy efficiency programs without the proper understanding of the implementation environment

Energy audit (1/2)

- Energy audit, almost universally, **aims at identifying opportunities to reduce energy and water consumption**
- It is a **systematic inspection and analysis of energy use and energy consumption** of a site, building, system or organisation with the objective of identifying energy flows and the potential for energy efficiency improvements and reporting them
- It starts from **understanding processes at the level of a building as whole** and recognizing issues that are relevant for energy and water consumption
- Main findings of energy audit are **energy efficiency measures grouped in energy retrofitting action plans** where each retrofitting proposal is evaluated in terms of investment cost and energy savings

Energy audit (2/2)

- Energy audit is a **dynamic category** (new EED)
- Relevant standards (ISO 50002 or EN 16247): **Auditor must estimate future energy use and consumption**
- Comprehensive energy audits require creation of different models and use of innovative tools such as **Building Energy Models (BEMs)** and **Building Information Modelling (BIM)**
- **Energy audit typically ends with recommendations – doesn‘t involve support for actual implementation**

Re-Commissioning

- Re-Co activities are focusing primarily on **identifying low-cost energy efficiency measures** and **providing support for their implementation to improve building‘s energy performance**
- The **inspection of the on-site metering system** – direct link between Re-Co and energy auditing
- Re-Co often includes the **implementation of ongoing monitoring strategies** to ensure that systems continue to operate efficiently over time
- **Improvements needs to be measured and verified** – essential element of Re-Co

Enery Performance Certification

- The EU has identified **buildings as being the most promising target for improving energy efficiency** – a significant energy-saving potential associated with infrastructure and equipment investments

- **EPC** has been developed **as a key policy instrument to improve energy efficiency, decrease energy consumption and provide more transparency on energy use in buildings**

- There is **a challenge to link EPC data with governmental financial support programs**, training for building managers and tailor-made information campaigns for building users

- Operational point of view - it is crucial **to properly present EPC data to ordinary people** which in many cases do not understand differences between calculated and measured energy consumption

EPC vs Energy Auditing vs Re-Commissioning

- All three processes contribute to the overall goal of **reducing energy consumption, cutting costs, and minimizing environmental impact**
- Each process plays a different role in this overarching aim: **energy audits identify opportunities**, **re-commissioning implements improvements**, and **energy performance certification recognizes and incentivizes achieving energy efficiency targets**
- What do they have in common besides common goal of improving energy efficiency?

On-Site Visit

What are the key steps of Re-Co? (1/5)

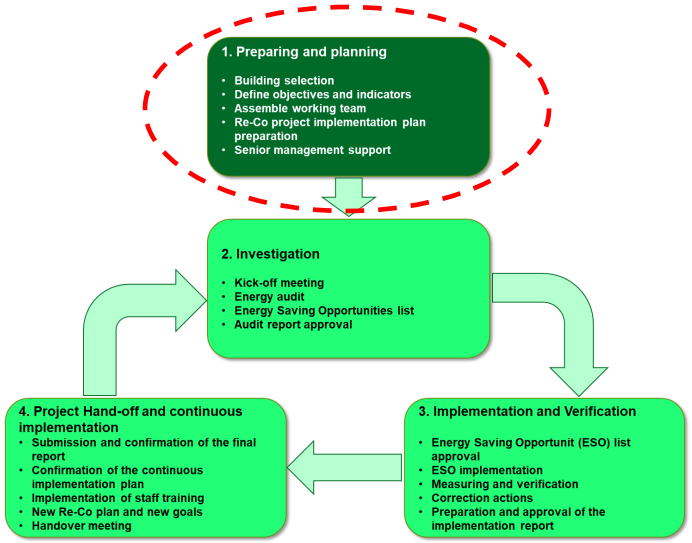
Re-Co implementation consists of four related steps:

1. Preparing and planning
2. Investigation
3. Implementation and Verification
4. Project Hand-off and continuous implementation

What are the key steps of Re-Co? (2/5)

Preparing and planning:

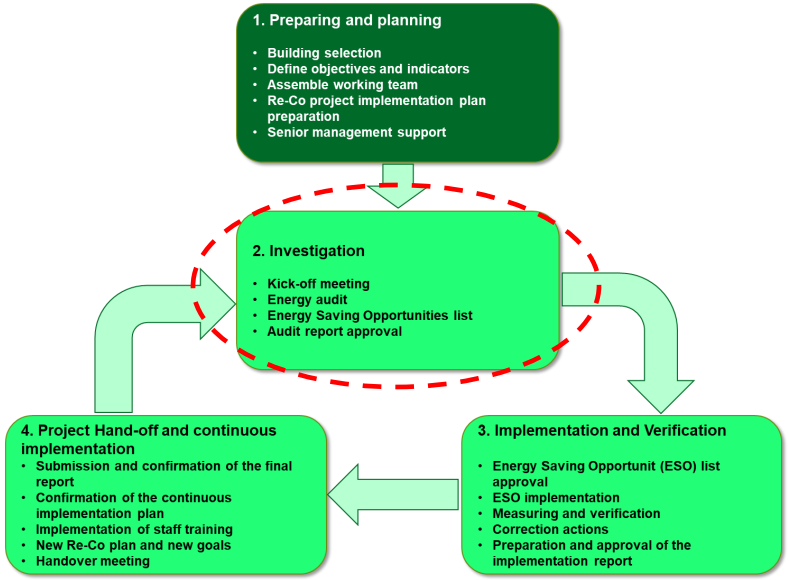
- Suitable building selection (age, condition, complexity, documentation, initial energy performance rating, BACS, inhouse staff, known problems, ROI, walkthrough audit …)
- Define objectives and key performance indicator (KPI)
- Assemble working team (external contractor, building staff)
- Re-Co project implementation plan preparation
- Senior management support



What are the key steps of Re-Co? (3/5)

Investigation:

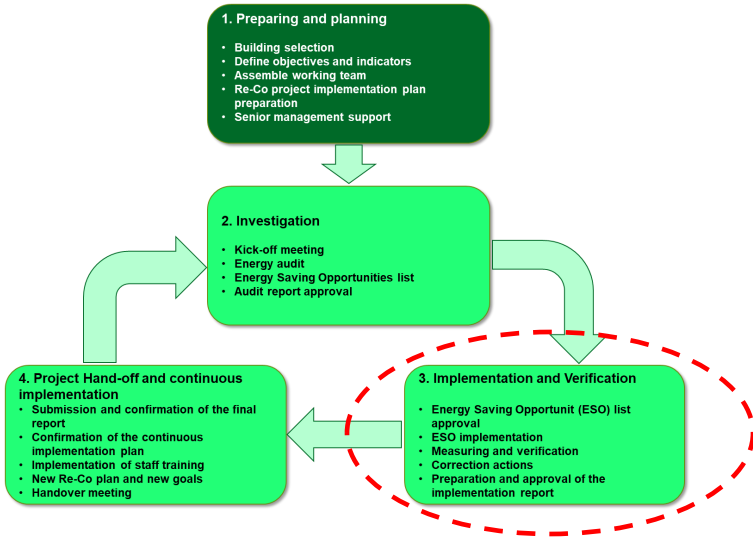
- Kick-off meeting (all teams and building management)
- Detailed energy audit
- List of energy saving opportunities (no cost and low cost)
- Audit report approved by the building representative



What are the key steps of Re-Co? (4/5)

Implementation and Verification:

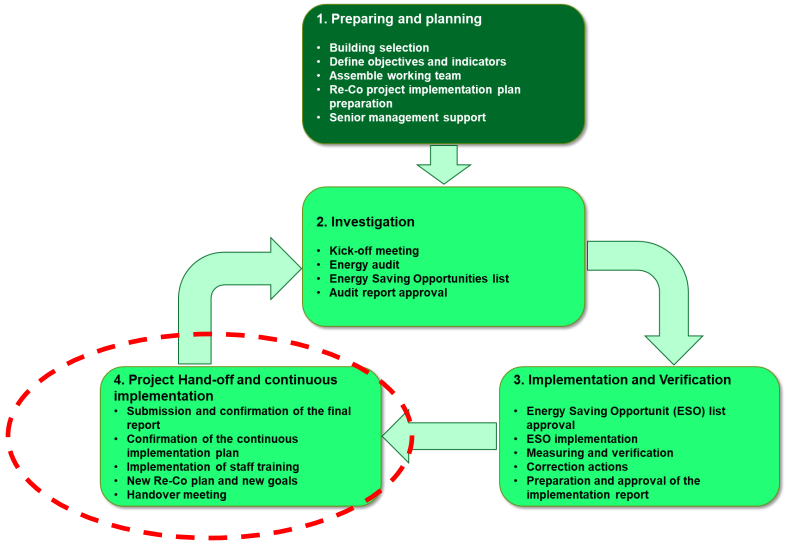
- Approval of selected energy saving measures
- ESM implementation
- Measuring and verification
- Correction actions
- Preparation and approval of the implementation report



What are the key steps of Re-Co? (5/5)

Project Hand-off and continuous implementation/monitoring:

- Submission and confirmation of the final report
- Confirmation of the continuous implementation plan
- Implementation of staff training
- New Re-Co plan and new goals
- Handover meeting

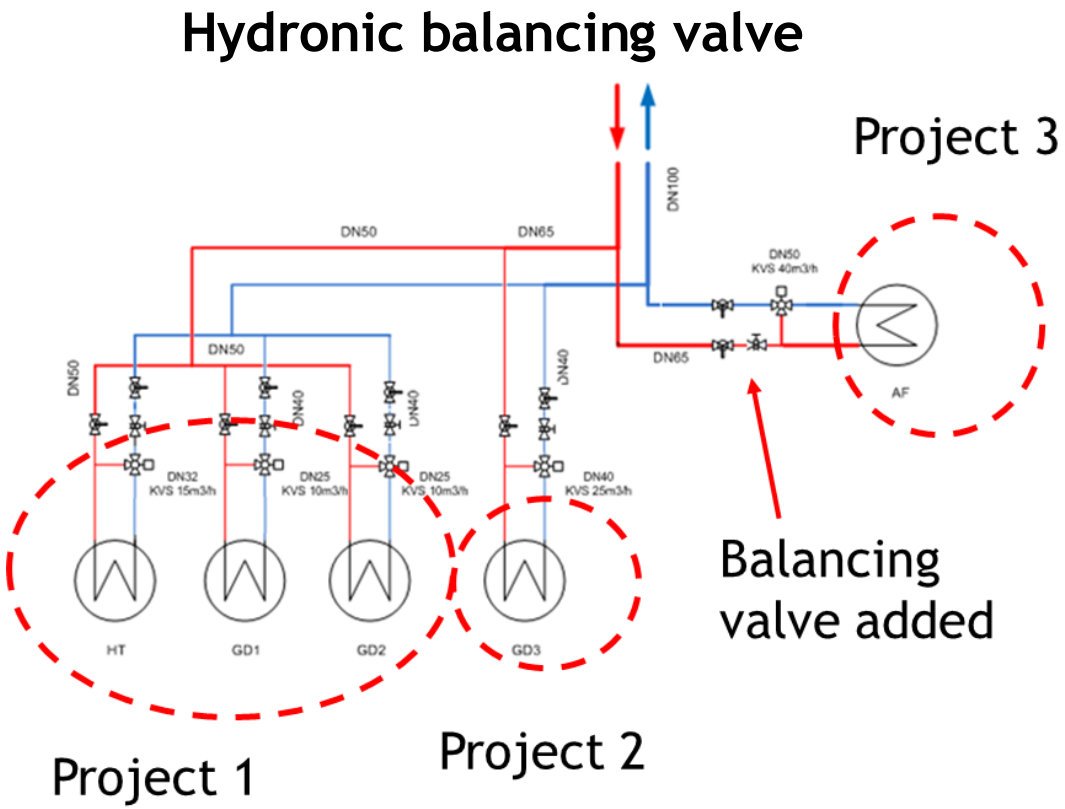


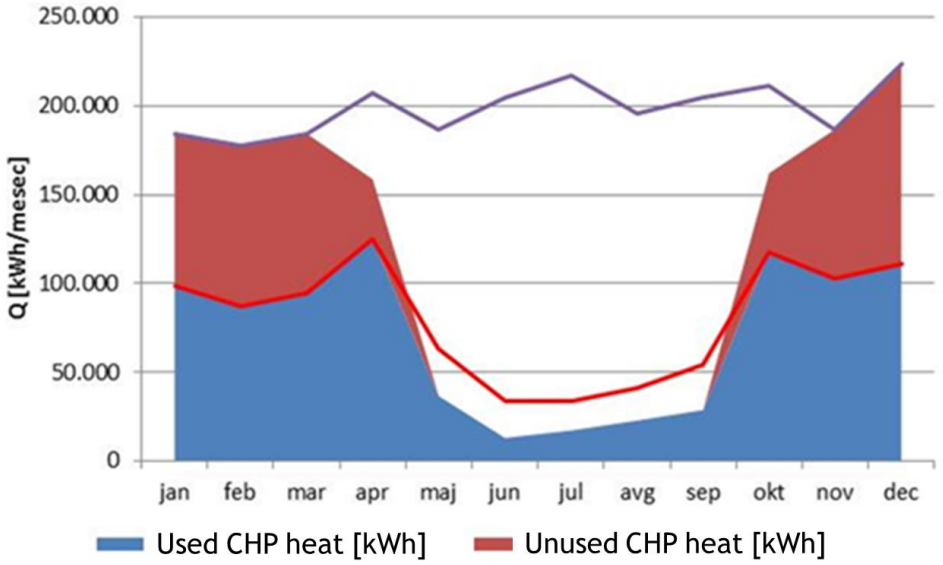
Why is it important to re-evaluate the energy performance of existing technical building systems? (1/2)

Re-evaluate systems is essential for maintaining optimal efficiency, occupant comfort, reducing operating costs, ensuring compliance with regulations, and minimizing environmental impact

- Changes in building usage patterns (different users, operational schedules, room purpose…)
- Wear and Tear of equipment (decreased efficiency and performance)
- Poor initial design

Why is it important to re-evaluate the energy performance of existing technical building systems? (2/2)

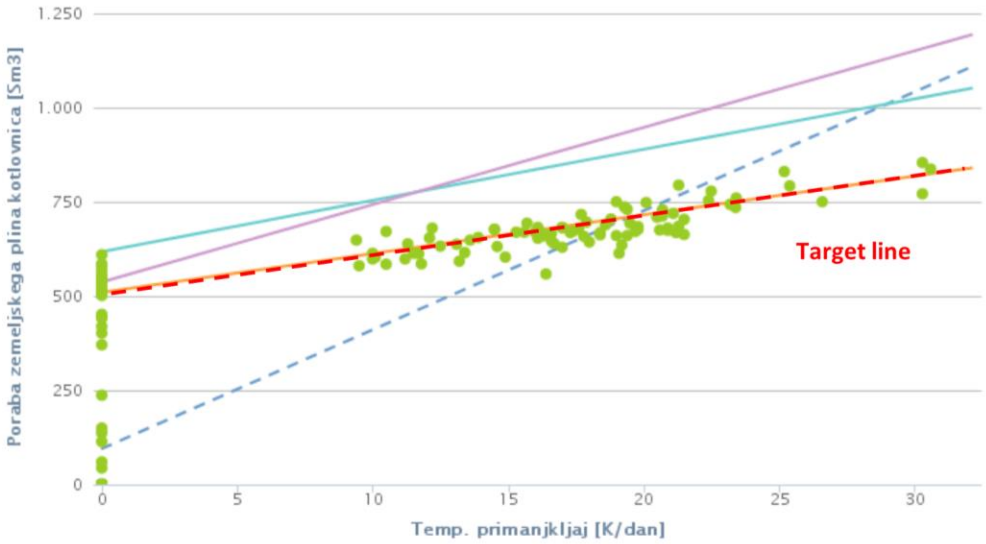




Why is target setting crucial for the overall success?

Target setting is essential for guiding, measuring, and evaluating the success of any energy efficiency project

- Must be understandable to all participants and feasible
- Clarity of objectives - provides clarity on the project's objectives and desired outcomes
- Measurement and evaluation – targets serve as benchmarks
- Responsibility – sets personal responsibility and commitment for achieving energy efficiency goals
- Motivation – well defined targets can motivate and engage stakeholders



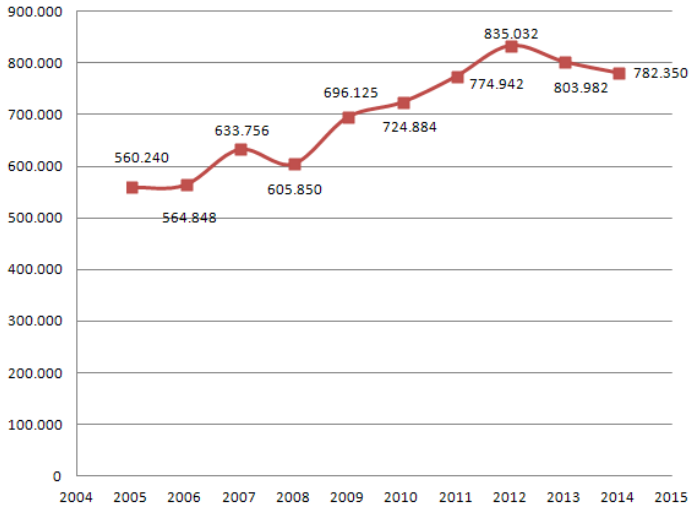
Implementation approach – complex building, advanced monitoring and targeting

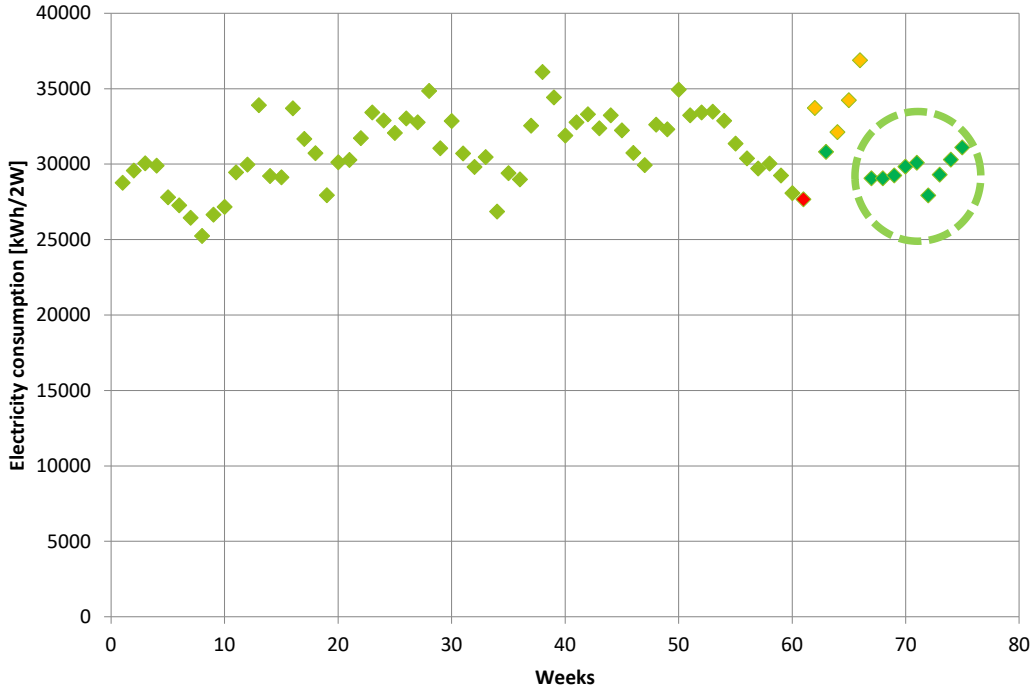
Staff motivation campaign!

Hospital, Slovenia, 2014

results -5%!

Actual consumption (verified) [kWh/14 days]	Predicted consumption (target) [kWh/14 days]
29.058	30.754
29.249	30.571
29.826	30.637
30.076	29.201
27.913	28.442
29.293	30.988
30.283	30.693
31.098	30.193





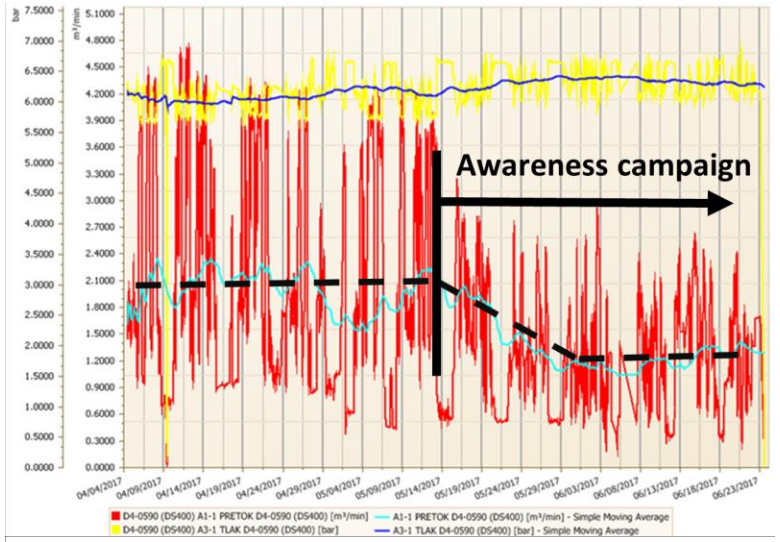
Why do we need training and how do we initiate awareness-raising activities?

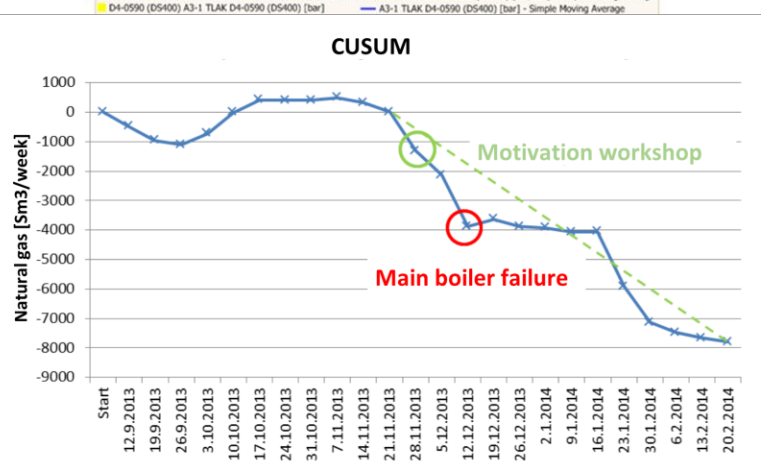
The human factor has a great impact on energy performance

- Skill and knowledge development (enhance the capacity of staff and users)
- Behavioural changes (encourage technical staff and users to adopt energy efficient practices)

How to do it?

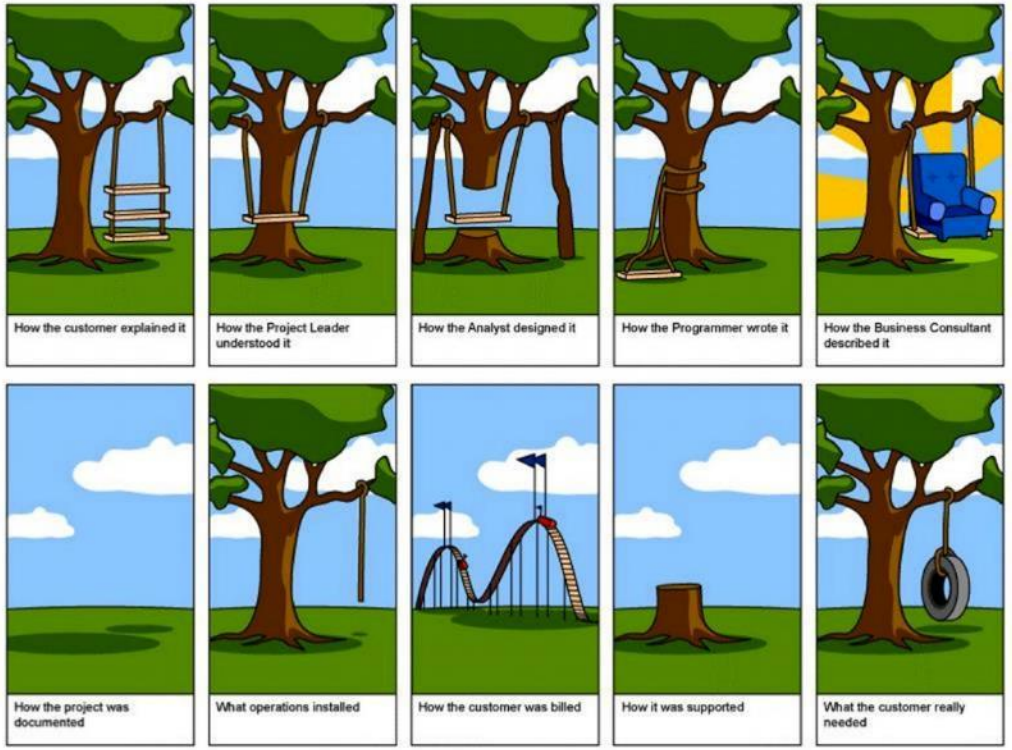
- Identify target audience!
- Signs, billboards, posters, interviews, workshops, specialized technical trainings
- Evaluate effectiveness and promote incentives and rewards
- Should be carried out periodically to ensure the ongoing impact!





Instead of conclusion – keep the common sense

- Combine activities but never forget your initial goals and expectations from the client!



Source: Watts, A. (2014). *Project Management*. Victoria, B.C.: BCcampus. Retrieved from https://opentextbc.ca/projectmanagement/ and Watt, A., Barron, M., and Barron, A. (2014). *Project Initiation in Project Management*. Victoria, B.C.: BCcampus [online] Available at: https://opentextbc.ca/projectmanagement/chapter/chapter-7-project-initiation-project-management/ [Accessed 19 March 2024]

TIMEPAC The new EPC for Europe

If you would like more information, please visit www.timepac.eu or contact us at

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