COST ENGINEERING

VERBETER CHANGE MANAGEMENT MET FIELD CHANGE TRACKING

Elmer Sachteleben

Cost Engineering Consultancy

dace
cost and value

About Elmer Sachteleben

Position

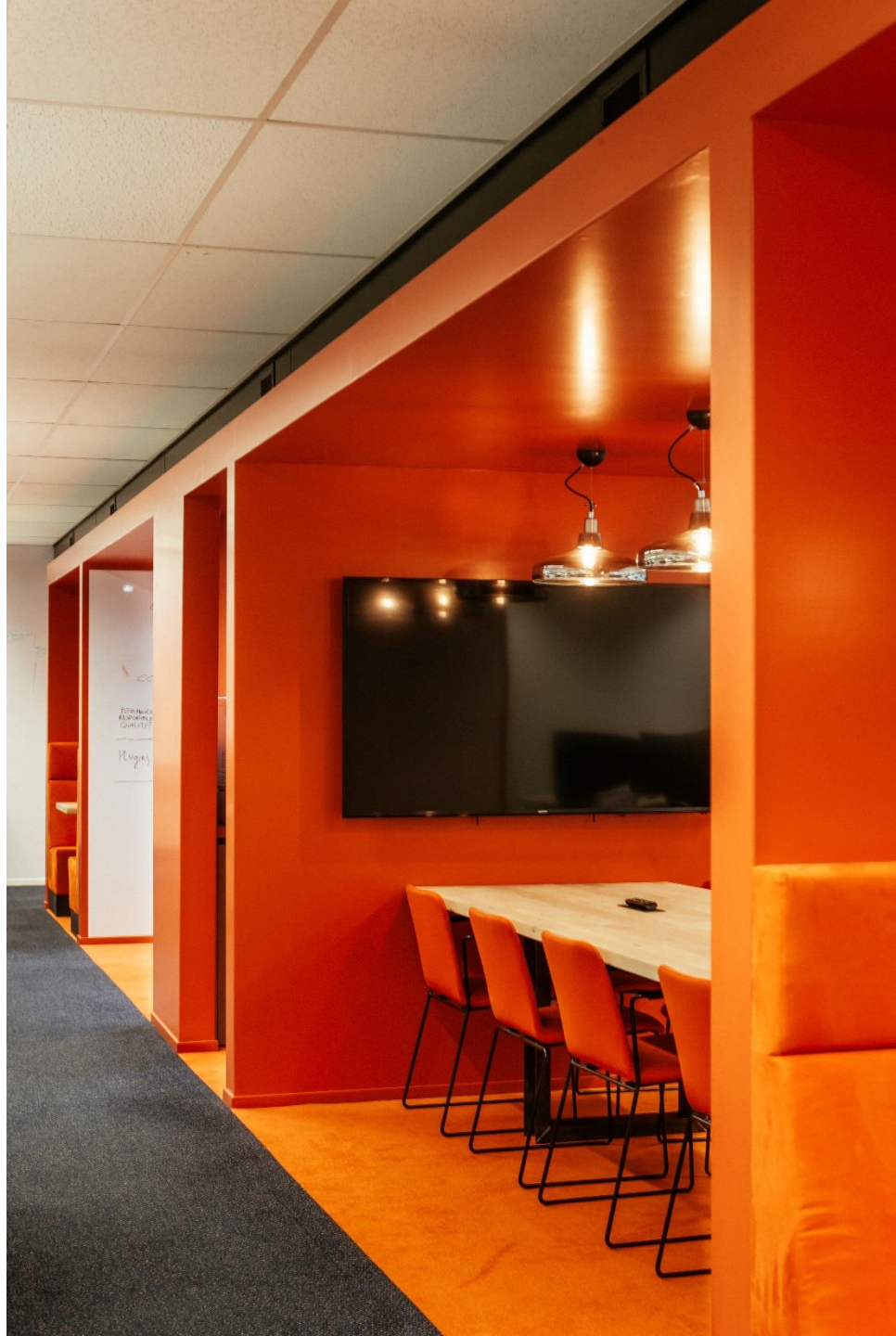
- Senior Cost Engineer (CCE) at Cost Engineering Consultancy
- Director of the Cost Engineering Academy
- Teacher at the DACE

Experience

- Provided consulting services to major companies such as: Shell, Unilever, Bayer, Cargill, Heineken, Fluor, Vopak, Enbridge, Yara and Rijkswaterstaat

Cost Engineering Consultancy

- 24+ years experience
- Operating worldwide
- Consultancy and software solutions
- Knowledge Provider
- Empowering organizations to improve their project performance



Clients and Industries

- Bulk storage
- Construction industry
- EPC(M)
- Food and Nutrition
- Infrastructure
- Offshore
- Oil & Gas industry
- Heavy industry
- Pharmaceutical industry
- Petro-/chemical industry
- Power industry
- Mining & Minerals

Our vision:

Benchmarking

Cost Management

Consultancy

Estimating

Academy

Cleopatra Enterprise

Scheduling

CESK: cost estimating data

Topics

- Change management
- Change tracking

Change management

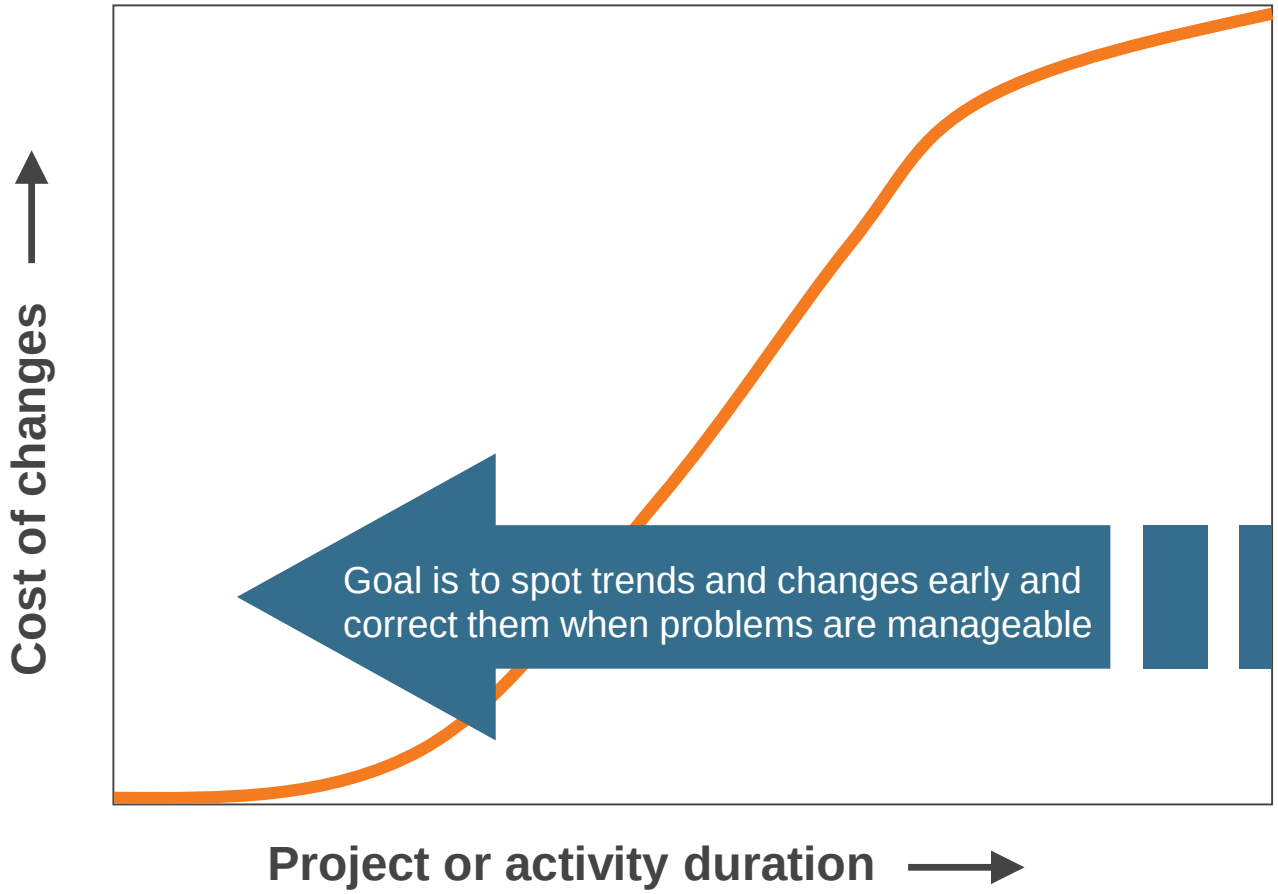
Added value of cost control

- Cost Control supports the overall viability of the project by:
  - Supporting change management,
  - Forecasting,
  - Risk analysis,
  - Corrective action planning
- Otherwise it is accounting (tracking only spending)
- **This is lagging in the Netherlands and Europe**

"Your move"

Added value of cost control

- Only tracking spending:
  - Performance problems are not noticed until too late
  - Corrective actions are more costly (if possible at all)



Where do changes come from?

Internal (variance/ deviation)

Examples:

- Contractor’s mistakes in design, procurement, or construction
- Productivity, labour rates, and mix variances
- Wrongly planned contractor’s work
- Engineering contractor’s design development
- A variation which the contractor should have foreseen
- Non Client-directed changes to design or execution plan

External (scope changes)

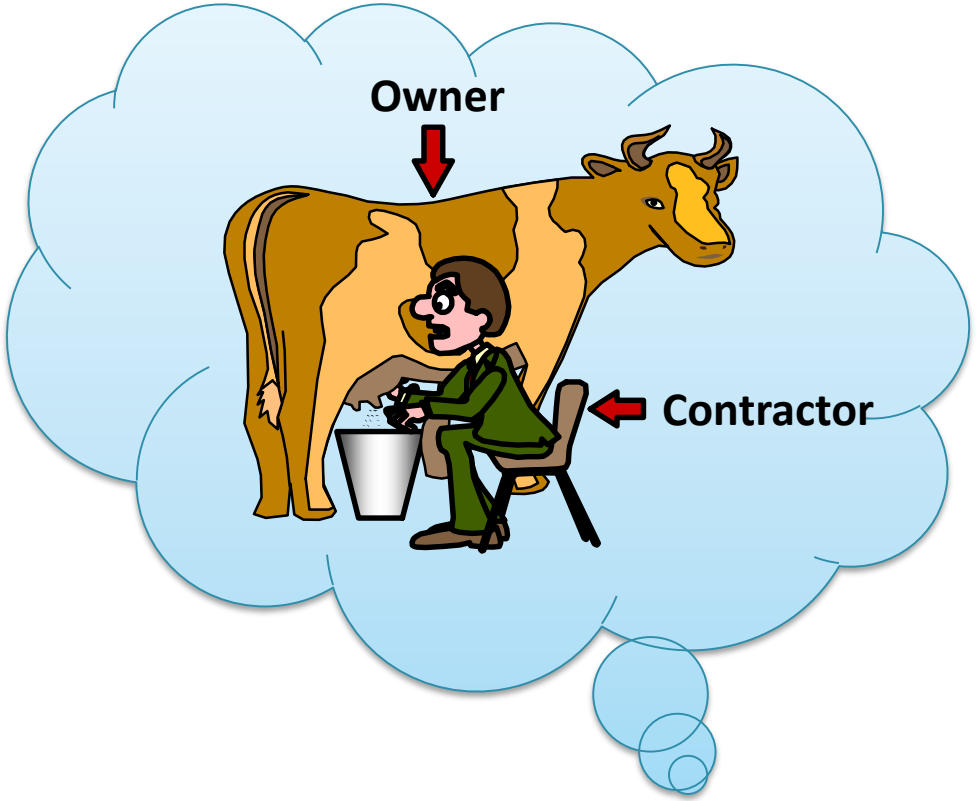
Examples:

- Client change to contractor's scope
- Schedule acceleration or slowdown by the Client
- Additional Client design studies
- Unidentified adverse soil and other site conditions
- Client delays in issuing information to contractor
- Defects in Client-supplied equipment and materials
- Mistakes in Client-supplied information

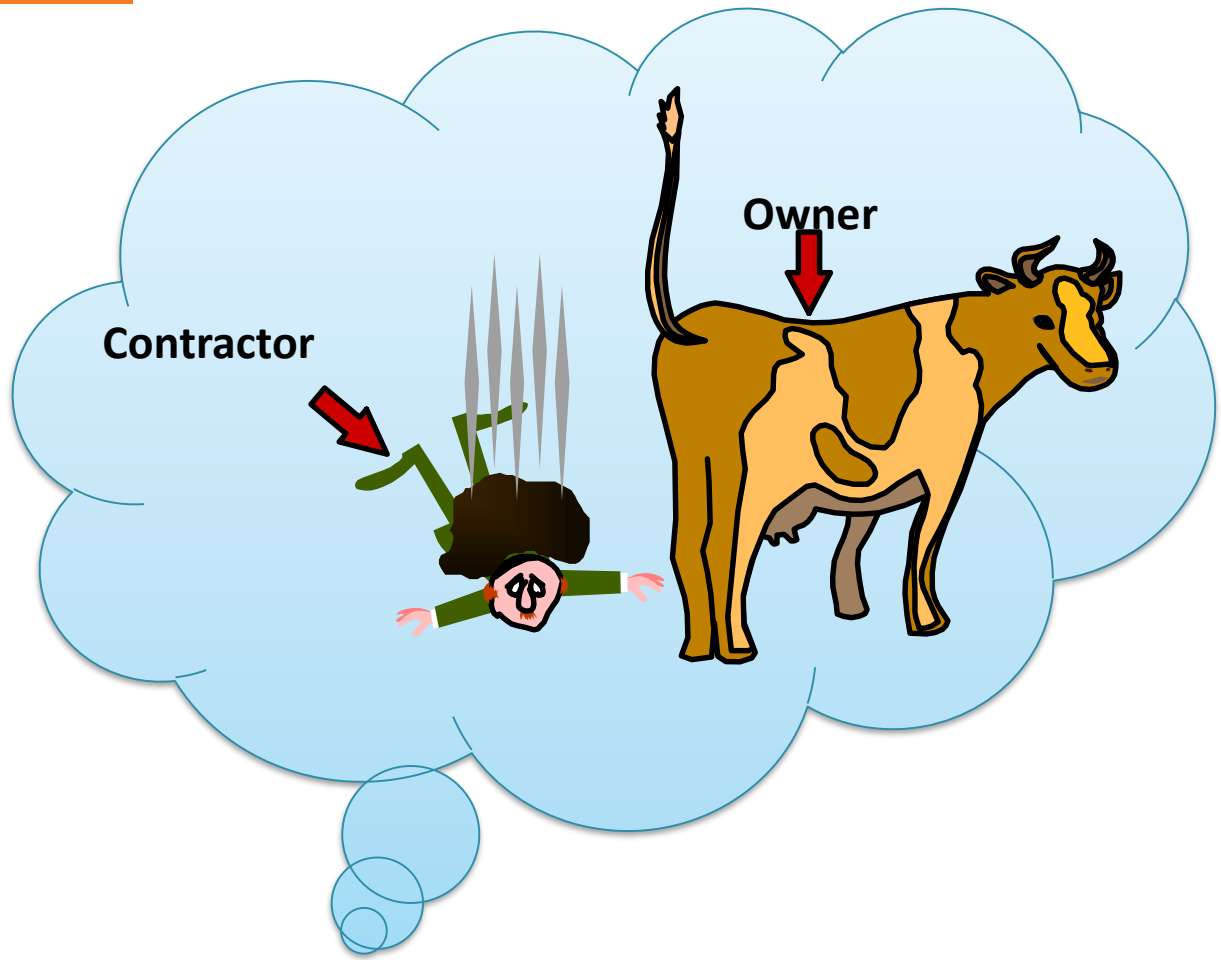
Negative impact of changes

- Changes can be significant
- Can have negative side effects
  - Schedule disruption
  - Slow job momentum
  - Dampen cost conscious atmosphere
  - Divert effort from more critical tasks
  - Productivity loss
- Number of changes can be significant… paper chasing instead of managing
- **We need a way to manage changes!**

Traditional way of thinking…



Owner's perspective



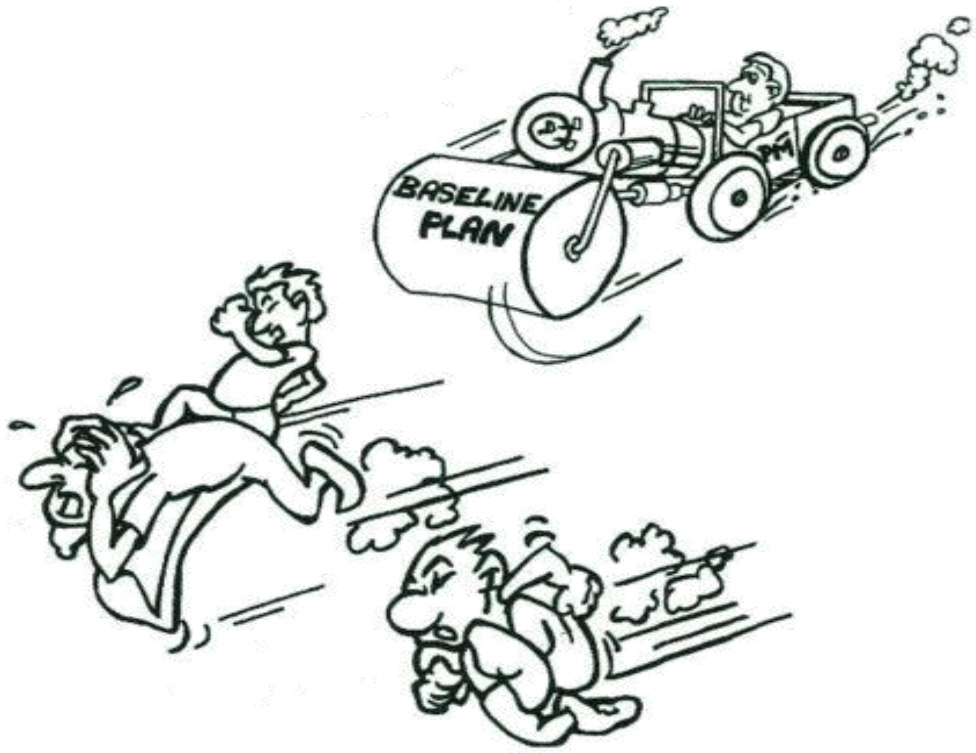
Contractor's perspective

Credit: P.E.M. Dijkgraaf

Changes for owners

- Deviation from agreed scope with the business (project plan): **scope change**
  - Additional funds needed from business

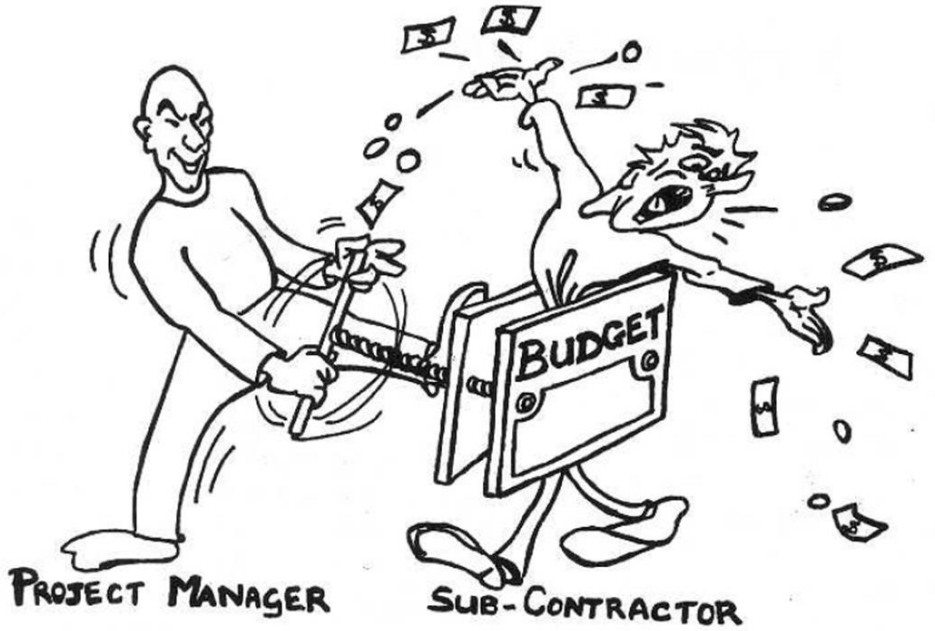
- Design changes, errors, price changes, etc. are not scope changes
  - Covered by owner's contingency/ escalation



Changes for contractors

- Deviation from agreed scope with the client (contract): **scope change**
  - Additional funds needed from client
  - Scope change for the **contract** may not be a scope change for the **project**

- Within the contract, design changes, errors, price changes, performance issues, etc. are not scope changes
  - Covered by contractor's contingency/ escalation

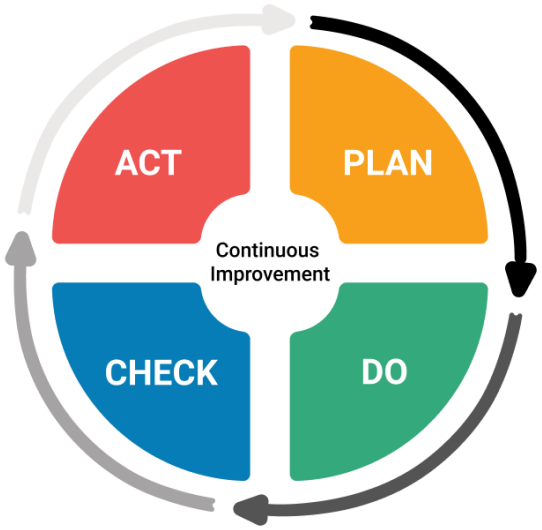


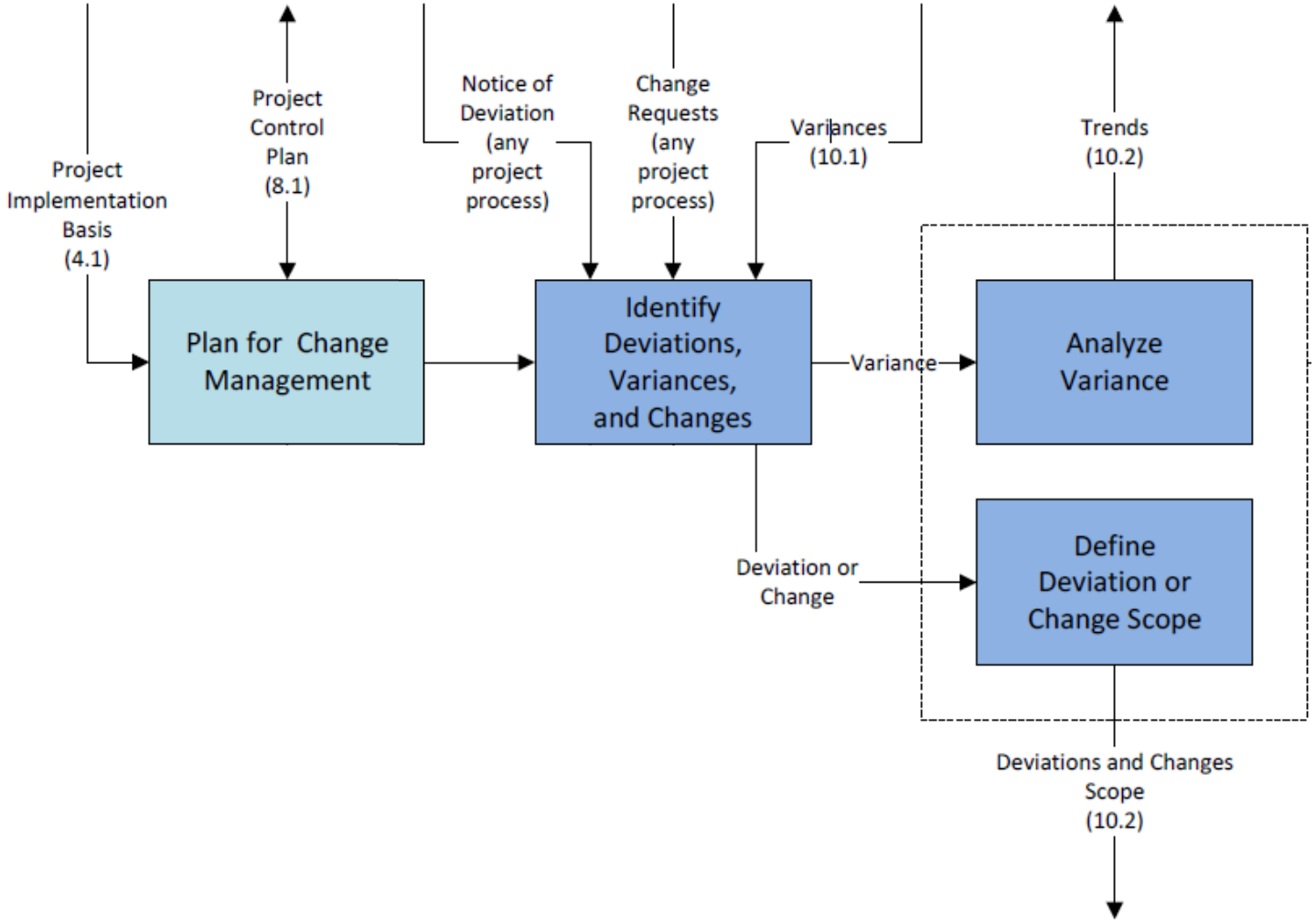
Change management process

- Setup a formal process to:
  - Manage and document changes
  - Support clear communication between client and contractor
  - Analyse the impact of changes
  - Examine risks due to changes
  - Influence changes to be beneficial
  - Maintain contingency/ change allowances
- **These processes exist and are used extensively in the US**

Key steps of a Change Management Process

1. **Identify** variances, deviations and scope changes
2. **Impact** and trend analysis: Time, Cost, Quality, Scope, Business Case, Benefits, Risk
3. Consider **alternative** options
4. Make the **decision**
5. **Implement** change
6. **Lessons learned**: continuous improvement



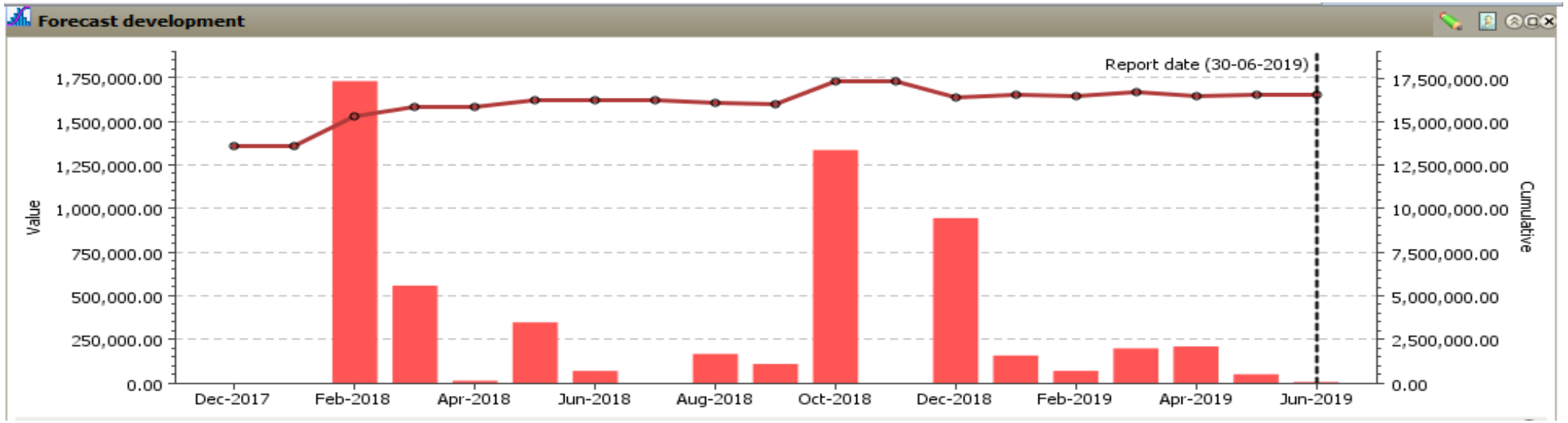


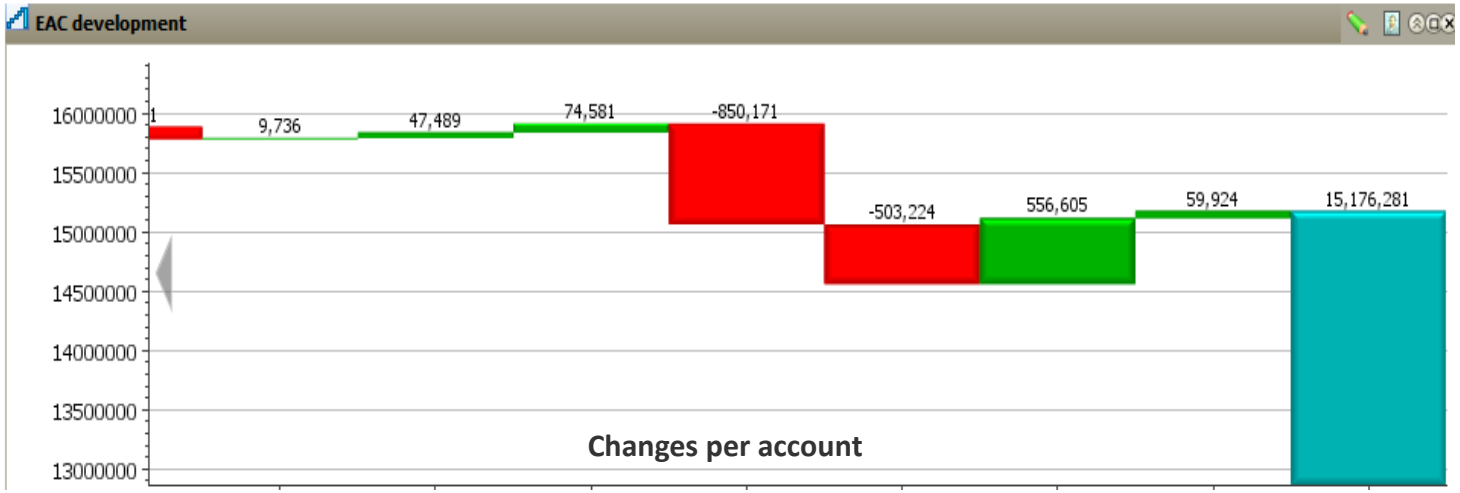
Change management process

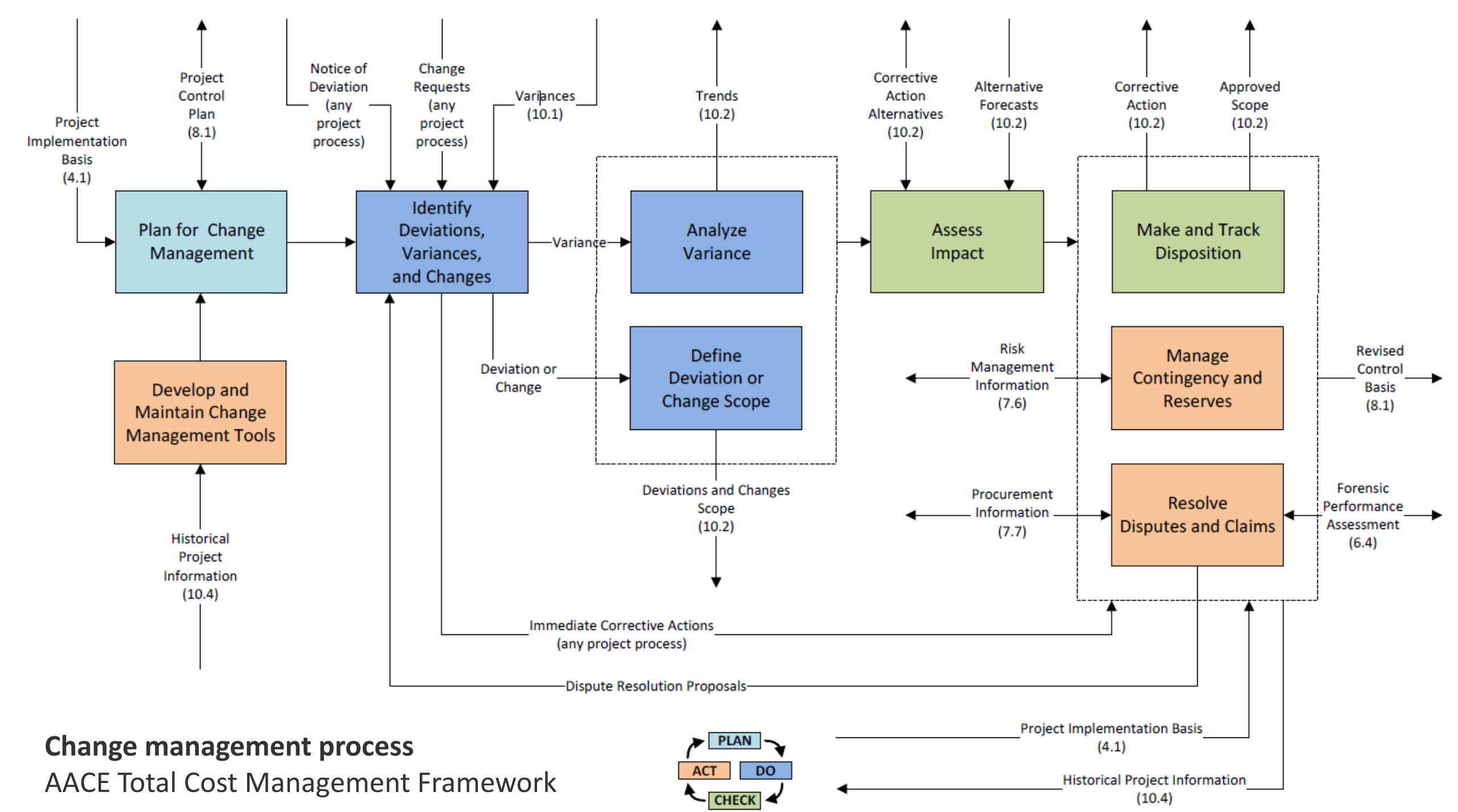
AACE Total Cost Management Framework

Variance analysis: spot trends

Cost Management Dashboard







Change management process

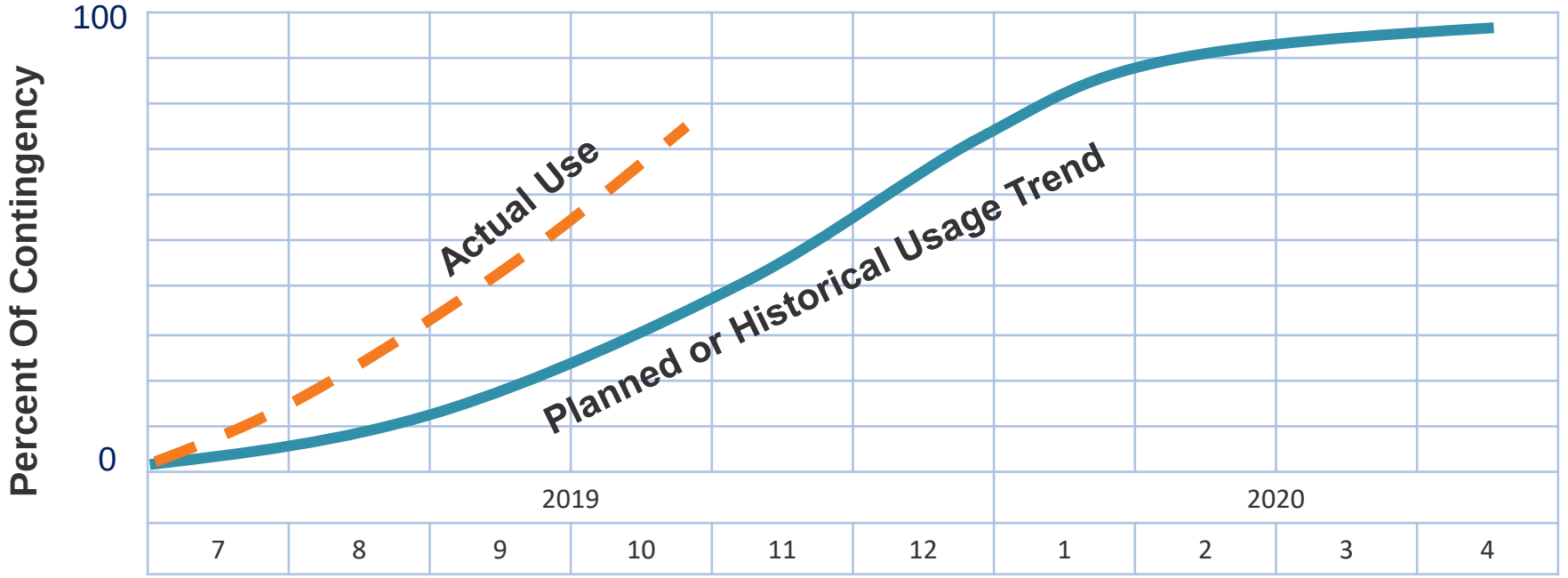
AACE Total Cost Management Framework

Contingency & changes

- A change may create down stream risk events: be aware and build in the appropriate costs
- **Accepting a change is accepting the inherent risks**

Contingency & changes

- Track changes against contingency usage
- Poor contingency estimating and poor change management leads to early consumption of all contingency



Change Tracking

Field Change Order (FCO)

- During project execution a quicker change process is common: Field Change Order (FCO) procedure
- Requested by the Owner or Contractor during execution.

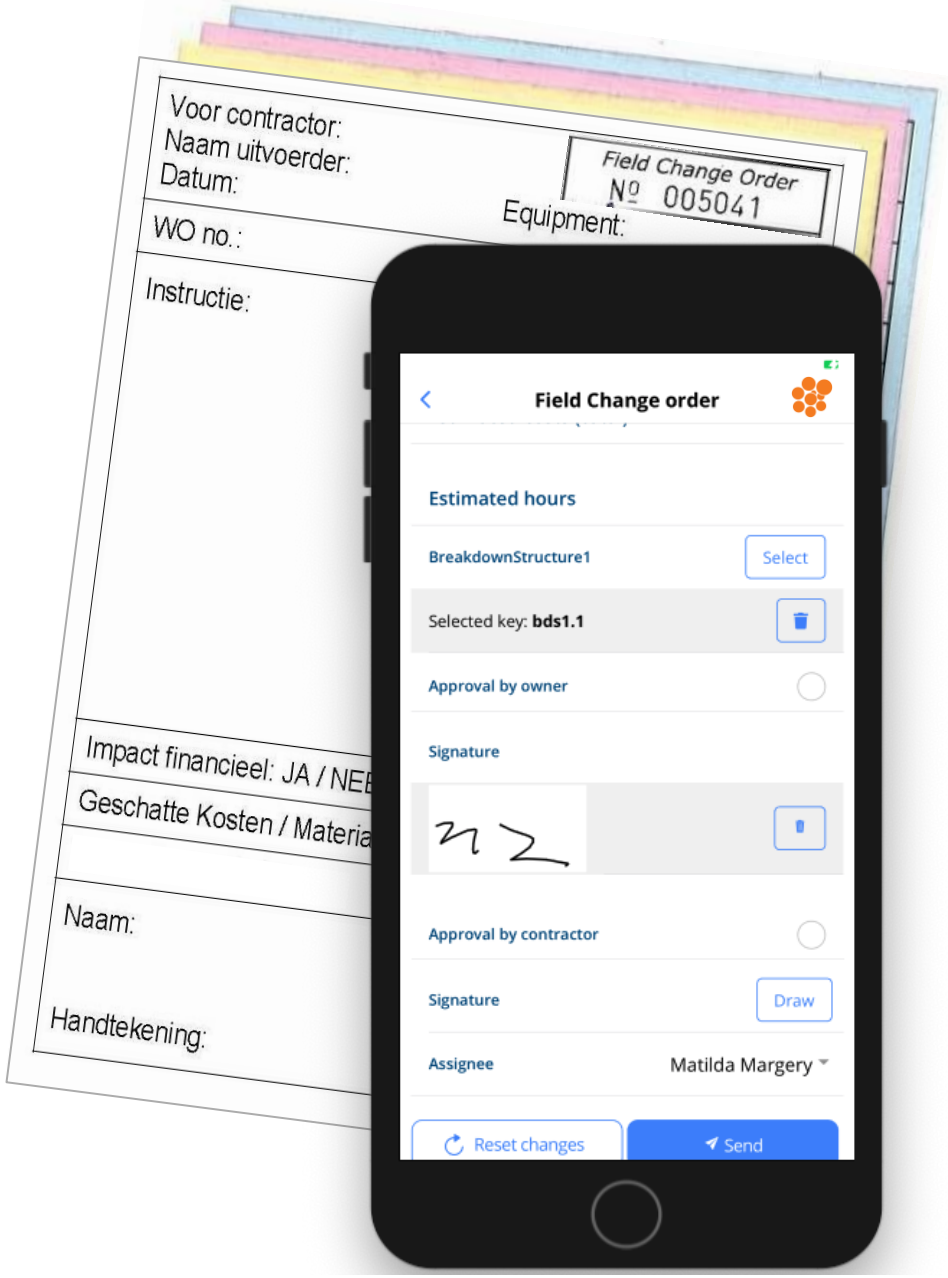
Field Change Order (FCO)

Field changes occur in case of:

- Rework
- Discovery work/ extra scope that is not in the agreed work packages
- Deletion of scope from the agreed work package
- Deviation from quantities (incl. hours)
- Changes in agreed staffing plans
- Waiting hours
- Extra or fewer costs made.

Preparing for FCO tracking

- When the FCO procedure is clearly defined, paper chasing is minimized
- Centralized, tracible data
- Real-time change and trend management
  --> **improved forecasting**



FCO procedure

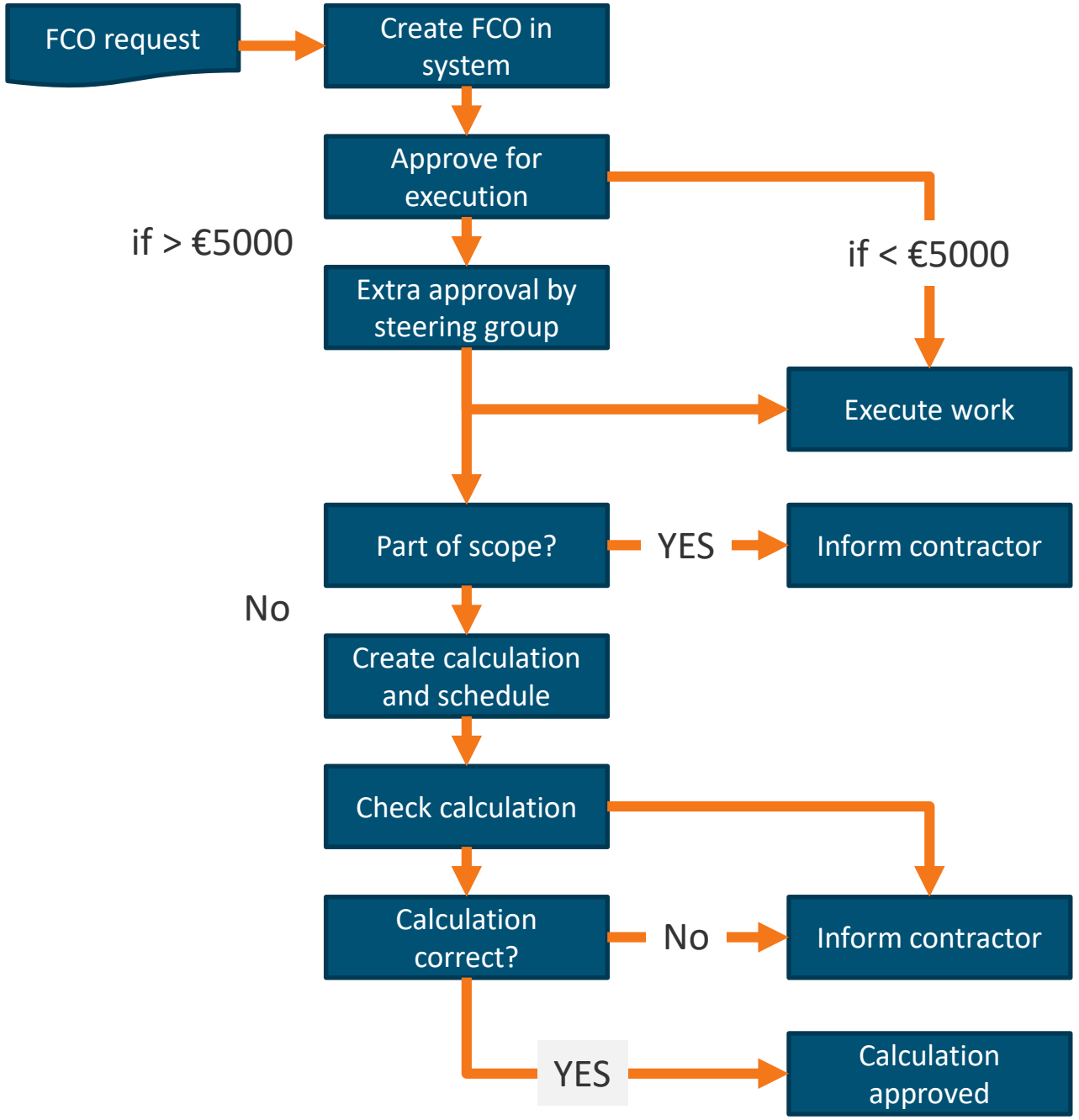
- FCO procedure follows these steps:

FCO initiation: Contractor or Owner submits FCO in a timely manner.

FCO approval by construction coordinator for small FCOs, Project manager for large FCOs.

Copy of signed FCO for Owner controller, Contractor and Owner construction coordinator.

Estimate and work order of the required resources and schedule impact.



1. Contractor initiates Field Change Order (FCO) request and estimates cost and hours

2a. Owner construction coordinator. Can approve FCO immediately if cost < €5000.

2b. Owner project manager. Additionally, needs to approve FCO if cost > €5000.

3. Contractor executes work

4. Owner project controller checks if FCO is part of existing scope. If yes, payment is rejected.

5. Contractor calculates exact cost and hours

6. Owner project controller checks calculation and informs owner's project manager

7. Owner project manager approves/ rejects

8. Owner project controller adds FCO in database and updates estimate and schedule

Automation of FCO tracking process

Conclusion

- Change is not always bad,
  but it **must always be managed**.
- A streamlined **process** must be in place.
- To achieve the best results, owner and
  contractor should **work together**.

Questions

call +31(0)78 620 0910 or visit www.costengineering.eu