Benchmarking principles and best practice
Benchmarking
- continual improvements
Definition of benchmarking

- Is “an external focus on internal activities, functions or operations in order to achieve continuous improvements” (Leibfreid and McNair, 1994)

- “(...) the practice of being humble enough to admit that someone else is better at something, and being wise enough to learn how to match and even surpass them at it.” (American Productivity & Quality Center, 1993)

- Benchmarking is a system by which organisations or units can measure their position and performance level by comparing the performance of similar processes to other corporations or units
Benchmarking - continual improvement

- Knowing how an organisation performs is vital to understand the effects of any improvement.
- Benchmarking provides a **tool** for analysing, comparing and measuring the organisation’s or unit’s performance (Kreodi, 1999), that is, a tool for continual improvements
  - Identify and close the gaps

Learning and improvement

Identify and measure current practice

Comparisons
Different types of benchmarking

Depending on WHAT

- **Performance benchmarking**
  - comparison of performance measures

- **Process benchmarking**
  - comparison of methods and practices for performing business processes

- **Strategic benchmarking**
  - comparison of the strategic choices and dispositions made by other companies

Depending on WHOM

- **Internal benchmarking**
  - between departments, units, countries etc. same company

- **Competitive benchmarking**
  - own performance/results against the best real competitors, same product/service

- **Functional benchmarking**
  - own process/functions against non-competitors companies, same industry

- **Generic benchmarking**
  - own process against best practices, regardless of industry
Recommended combinations of types of benchmarking

<table>
<thead>
<tr>
<th></th>
<th>Internal</th>
<th>Competitor</th>
<th>Functional</th>
<th>Generic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>♥</td>
<td>♣</td>
<td>♥</td>
<td>♦</td>
</tr>
<tr>
<td>Process</td>
<td>♥</td>
<td>♦</td>
<td>♣</td>
<td>♣</td>
</tr>
<tr>
<td>Strategic</td>
<td>♦</td>
<td>♣</td>
<td>♦</td>
<td>♦</td>
</tr>
<tr>
<td>Relevance/ value:</td>
<td>♣ high</td>
<td>♥ medium</td>
<td>♦ low</td>
<td></td>
</tr>
</tbody>
</table>

(Andersen and Pettersen, 1995)
Benchmarking & Business Strategies

- Ideas, norms and values
- Vision
- Long-term goals
- Short-term goals
- Vital improvement projects

Benchmarks: How good? Which goals?

Benchmarks: How? Praxis and methods?
The Benchmarking "wheel"

- Plan
- Search
- Observe
- Analyse
- Adjust
Measuring Performance and Benchmarking
Key Performance Indicators (KPIs)

• Indicator comes from Latin *indicare* = to proclaim/indicate
  – To point out, to discover, to direct to a knowledge of, to show to make known

  – Indicators thereby gives us knowledge about what we are interested in

  – Often we need to focus on an indicator instead of trying to measure the things in themselves, of practical reasons
Need to simplify in practice

• Example 1 – average square meter price of living flats in a country:
  – It might be better to examine a smaller and random sample of living flats, and based on this calculate an estimator of the average square meter price of all living flats in the country

• Example 2 - relevant facts are multidimensional
  – BMI (body mass index) is easier to use instead of more complicated, but also more precise, measures
Measuring performance

1. Identify critical success factors (CSF)
   - Who is involved in delivering the services?
   - Why are they involved?
   - What are they doing?
   - Why are they doing it?
   - Is what they are doing adding value?

• KPI = Measure of a factor critical to success
Performance matrix

- Overkill
- Everything is fine
- Unimportant
- Improvements are needed
Identifying CSF

1. Is the problem related to customer or production?
2. What is the output? How is it measured?
3. Which factors are important for customer experienced value?
4. Which factors/functions/processes creates most problems? Have the problems increased/decreased lately?
5. Does areas exist that are not marketing oriented?
6. What area/organisation has biggest part of total cost?
7. What problems are known or has been identified in the organisation? Have attempts been made to solve them before?
8. What areas has the highest improvement capacity?
9. Which areas are critical to create competitive advantage?
10. Are the problems operational or strategically?
Finding CFS
Finding CFS

<table>
<thead>
<tr>
<th>Område</th>
<th>Adress</th>
<th>Pris</th>
<th>Dagar</th>
<th>Storlek (m²)</th>
<th>Tomtarea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lund - Norr</td>
<td>Litbytningsgränden 4</td>
<td>765 000 kr</td>
<td>1 dag</td>
<td>36 m²</td>
<td>1 rum</td>
</tr>
<tr>
<td>Lund - Östra Torn</td>
<td>Flöjtvägen 16 B</td>
<td>1 275 000 kr</td>
<td>1 dag</td>
<td>83,6 m²</td>
<td>3 rum</td>
</tr>
<tr>
<td>Lund - Klostergården</td>
<td>Sunnerväg 14 D</td>
<td>1 395 000 kr</td>
<td>1 dag</td>
<td>78 m²</td>
<td>3 rum</td>
</tr>
<tr>
<td>Klostergården</td>
<td>Ellidadersvägen 6 F</td>
<td>1 495 000 kr</td>
<td>3 dag</td>
<td>102 m²</td>
<td>4 rum</td>
</tr>
<tr>
<td>Lund</td>
<td>Parlemas Gränd 37</td>
<td>1 495 000 kr</td>
<td>4 dag</td>
<td>65 m²</td>
<td>3 rum</td>
</tr>
<tr>
<td>Väster</td>
<td>Trastvägen 8</td>
<td>2 395 000 kr</td>
<td>4 dag</td>
<td>122 m²</td>
<td>5 rum</td>
</tr>
<tr>
<td>Klostergården</td>
<td>Ellidadersvägen 6d</td>
<td>1 895 000 kr</td>
<td>4 dag</td>
<td>126 m²</td>
<td>5 rum</td>
</tr>
<tr>
<td>Norra Fäladen / S...</td>
<td>Skarpspyttvägen 30 C</td>
<td>1 100 000 kr</td>
<td>4 dag</td>
<td>95 m²</td>
<td>3 rum</td>
</tr>
<tr>
<td>Linero</td>
<td>Tre Högars väg 2 B</td>
<td>775 000 kr</td>
<td>4 dag</td>
<td>69 m²</td>
<td>2 rum</td>
</tr>
<tr>
<td>Centrum</td>
<td>S:t Laurentigata...</td>
<td>2 500 000 kr</td>
<td>4 dag</td>
<td>89 m²</td>
<td>3 rum</td>
</tr>
<tr>
<td>Lund</td>
<td>Parlemas Gränd 37</td>
<td>1 750 000 kr</td>
<td>4 dag</td>
<td>89 m²</td>
<td>4 rum</td>
</tr>
<tr>
<td>Södra sandby - Rå...</td>
<td>BLÅMÅSVÄGEN 9</td>
<td>2 600 000 kr</td>
<td>4 dag</td>
<td>115 m²</td>
<td>4 rum</td>
</tr>
<tr>
<td>Centrum</td>
<td>Tulligatan 1 B</td>
<td>1 726 000 kr</td>
<td>4 dag</td>
<td>71 m²</td>
<td>3 rum</td>
</tr>
</tbody>
</table>

Lund University / Construction Management/ VBEN05 Facilities management/ HT 2011
Considerations when creating indicators

Indicators
• A hierarchy of quantitative and exact indicators
• A facet of qualitative and emotional indicators

Users
• Technical users and a high degree of details
• General users and a low degree of details

Innovation
• Research and scientific thinking
• World-class enterprises
Best Practice Project

BPP - mätverktyget för samhällsbyggare
Utvärderingsmodell med två perspektiv

**Hur vi gör**

<table>
<thead>
<tr>
<th>Ledarskap</th>
<th>Medarbetare</th>
<th>Organisation</th>
<th>Processer</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Personligt ledarskap</td>
<td>• Inflytande</td>
<td>• Arbetssätt och metoder för…</td>
<td>• Planerbarhet</td>
</tr>
<tr>
<td>• Administrativt ledarskap</td>
<td>• Trivsel</td>
<td>... att fördela ansvar etc</td>
<td>• Samarbete och samverkan</td>
</tr>
<tr>
<td>• Dagligt ledarskap</td>
<td>• Personlig utveckling</td>
<td>... att säkerställa backup</td>
<td>• Framdrift av projektet</td>
</tr>
<tr>
<td>• Målkommunikation</td>
<td>• Lojalitet</td>
<td>... att välja rätt leverantörer</td>
<td>• Metoder och arbetssätt för…</td>
</tr>
<tr>
<td>• Riskanalys</td>
<td>• Engagemang</td>
<td>• Tillsättning av kompetens och resurser</td>
<td>... styrning av tid</td>
</tr>
<tr>
<td>• Erfarenhetsåterföring</td>
<td>• Arbetsbelastning</td>
<td></td>
<td>... styrning av kostnader</td>
</tr>
</tbody>
</table>

**Program (inkl. projektöversikt)**

**Projektering**

**Produktion**

**Brukande**

**Procesrelaterad utvärdering**

**Målrelaterad utvärdering**

**Vad vi gör**

**Effekt-/verksamhetsmål och projektmål**

Målsättning – målavstämning – måluppfyllelse
Tonvikt vid ständig förbättring

- Utvärderas av ledningen
- Utvärderas av samtliga

Tempmätningar i projektet

- Behöver åtgärder vidtas innan start?
- Hur fungerar det?
- Vad bär göras?
- Behöver det förbättras omgående?
- Vad bidrog till resultatet?
- Behöver åtgärder vidtas inför nästa projekt?
- Hur ser förutsättningar na ut?
- Nästa projekt
Kundnytta BPP-Verktyget

• Mätbarhet
  – Mäter mjuka värden, projektets drivkrafter

• Erfarenhetsåterföring och styrinformation
  – Early-Warning-System, uppmärksammar tidiga varningssignaler
  – Stödjer planeringsprocessen

• Jämförbarhet
  – Mellan egna projekt
  – Med andra projekt i den nationella indexdatabasen

• Dialog
  – Snabb återkoppling, lokalt lärande

• Stöd vid val av leverantörer
  – Löpande utvärdering av underentreprenörer och konsulter
Process för ständig förbättring

1. Förberedelse
   - Datainsamling
   - Enkätresultat

2. Förberedelse
   - Uppföljning
   - Förberedelse

3. Premiering
   - Nominering och standardisering

4. Goda exempel
   - Åtgärder
   - Åtgärdsplan

5. Branschanalys
   - Analys
   - Återkoppling

6. Branschen
   - Benchmarking

7. Företaget
   - Dialog
   - Åtgärder

8. Projektet
   - Enkätresultat
   - Återkoppling
Processutvärdering

Ledningen bedömer förutsättningarna för väl fungerande processer inför varje delprojekt (Projektering, produktion samt större uppdrag).

Alla deltagande medarbetare i projektet utvärderar periodiskt sin egen upplevelse av processerna med ca 20 frågor.

Byggherren, projekteringsorganisationen, entreprenören samt större konsultföretag och underentreprenörers prestation utvärderas efter varje delprojekt/större uppdrag.

Ledningen utvärderar processernas resultat efter varje delprojekt (Projektering, produktion samt större uppdrag).

Ledningen skapar tidsatta aktiviteter med korrigerande åtgärder som automatiskt placeras ut i BPP-planen.

Samtliga deltagande medarbetare i projektet utvärderar periodiskt sin egen upplevelse av processerna med ca 20 frågor.
Mätresultat - jämförelser

Jämför olika projekt med varandra

U rval
- Citybanan (järnväg)
- E4 Enånger - Hudiksvall, mötesfri väg

Analysera målgrupp
(Betygsfrågor, multipelt urval, medelvärde)

1:1 Administrativt ledarskap
1:2 Personligt ledarskap
1:3 Dagligt ledarskap - instruktioner
1:4 Dagligt ledarskap - instruktioner
1:5 Arbetskraft
1 Frågeområde: Ledarskap
2:1 Inflytande
2:2 Trivsel
2:3 Lärande
2:4 Loyalitet
2:5 Problemlösnings
2 Frågeområde: Engagemang

2008-10-21, Cfm, Enkät: Stjärnmätning ... ntrepad demo //analyze/questionGroup/graphics/ctabv_multisel.png
Mätresultat - trender

Jämför olika gruppens resultat över tiden i ett projekt

Personligt ledarskap
Min ledningen inspirerar mig att göra mitt allra bästa i projektet
(Analysera fråga, Betygsdel, Multipelt urval, Medelvärde)

Urval
- Unval 1
  - Entreprenör
- Unval 2
  - Projektör
- Unval 3
  - Underentreprenör

Tidsserie
A: 2008 - Q1
B: 2008 - Q2
C: 2008 - Q3
D: 2008 - Q4

2008-10-21, Ctm, Stjärnmätning ... ntreprenad demo
Measuring Construction

There are 7 basic steps to the successful use of KPIs, and can be applied to any of the sets of Headline / Sector / Company-specific KPIs, but care must be taken to use the correct definitions and methods of measurement. This will help determine which KPIs to use, how to collect and manage the information, and how to report the results.

1. Decide what to measure: what is important to your organisation and to your customers
2. Collect data: from existing sources and new surveys
3. Calculate KPIs: decide what you are going to compare your results against, set realistic targets
4. Report results: e.g. by plotting them on a radar chart
5. Analyse results: look for links between different benchmark score and set clear decision criteria to judge what action is needed
6. Take action: avoid strategies that improve one aspect at the expense of another
7. Measure again: decide on how often to measure, i.e. annual, quarterly, monthly, etc.
Construction Best Practice program
- used workshops with business participants, to identify key measurements to success

- Client satisfaction with the product
- Client satisfaction with the service
- Defects in the product
- Predictability of cost
- Predictability of time
- Construction time
- Construction cost
- Safety
- Productivity
- Profitability
**KPI**

KPI 1  Customer satisfaction – product quality  
KPI 2  Customer satisfaction – delivery reliability  
KPI 3  Customer satisfaction – sales advice  
KPI 4  Customer satisfaction – after sales service  
KPI 5  Customer satisfaction – value for money  
KPI 6  Environment – energy consumption  
KPI 7  Environment – water use  
KPI 8  Environment – waste reduction  
KPI 9  Environment – transport movements  
KPI 10  Environment – packaging management  
KPI 11  People – safety at work  
KPI 12  People – sickness absence  
KPI 13  People – training  
KPI 14  People – qualifications  
KPI 15  People – equality & diversity  

**SPI (secondary performance indicators)**

SPI 1  Customer satisfaction – rate of use of questionnaire  
SPI 2  Customer satisfaction – rate of response to questionnaire  
SPI 3  Customer satisfaction – product quality – complaints  
SPI 4  Customer satisfaction – product quality – defects  
SPI 5  Customer satisfaction – product quality – cost  
SPI 6  Customer satisfaction – delivery reliability – complaints  
SPI 7  Customer satisfaction – delivery reliability – lateness  
SPI 8  Customer satisfaction – delivery reliability – correctness  
SPI 9  Customer satisfaction – sales advice – complaints  
SPI 10  Customer satisfaction – sales advice – phone calls  
SPI 11  Customer satisfaction – after sales service – provision  
SPI 12  Customer satisfaction – after sales service – complaints  
SPI 13  Customer satisfaction – value for money – complaints  
SPI 14  Customer satisfaction – value for money – cost  
SPI 15  Environment – energy consumption – renewable and alternative sources  
SPI 16  Environment – water usage – water recycling on site  
SPI 17  Environment – waste reduction – waste avoidance  
SPI 18  Environment – waste reduction – use of recycled materials  
SPI 19  Environment – packaging management – reuse of packaging  
SPI 20  People – safety at work – provision of safety officer  
SPI 21  People – sickness absence – absenteeism  
SPI 22  People – overtime – overtime worked  
SPI 23  Company – economic – sales per employee  
SPI 24  Company – economic – productivity  
SPI 25  Company – economic – stock turn  
SPI 26  Company – economic – conversion rate
Benchmarking FM

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customer</strong></td>
<td>how do customer see us?</td>
</tr>
<tr>
<td><strong>Financial</strong></td>
<td>how is the function managed to achieve best value?</td>
</tr>
<tr>
<td><strong>Operational</strong></td>
<td>how efficient and effective is the delivery of estates-related and facilities services?</td>
</tr>
<tr>
<td><strong>Innovation</strong></td>
<td>how does the facilities management function continue to improve and assist the core business in creating value?</td>
</tr>
</tbody>
</table>

Approach consistent to *The Balanced scorecard* (Kaplan and Norton, 1996)
Comparing with best practice – get a balanced view of the performance
Example, University buildings

- University and research properties
  - contain different types of space, like laboratories, lecture halls, class rooms, and office space
  - property portfolios are different, for instance animal hospitals versus music centers

How do you identify the CSFs and KPIs for university facilities from a FM perspective?
Design Quality Indicator

• Investigate the relation between value and design from a context and end-user perspective in the design phase

  – Function
    • Usability
    • Availability
    • Spaces

  – Build Quality
    • Performance
    • Technical systems
    • Construction

  – Impact
    • Contribution of design and material
    • Internal climate
    • Urban and social integration
    • Identity and character
Post-occupancy evaluation - KPIs

- Workplace size
- Workspace shape
- Density of people
- Location of people
- Quality of lighting
- Quality of air-conditioning
- Noise level
- Overall environment
Ex: Measuring sustainable buildings

- A sustainable building brings about the required performance with the least unfavourable environmental impact while encouraging economic, social and cultural improvement at a local, regional and global level (ISO)

- Green Star (AU), BREEM (UK), LEED (US) etc.

- Sustainable indicators
  - Environmental indicators
  - Economic indicators
  - Social Indicators

- Goal with indicators
  - Quantification, simplification and communication

- Both qualitative and quantitative measures
  \(\rightarrow\) difficult to compare
Satisfied Customer Indicator (SCI)

• Brings information of customer satisfaction with delivered service/product
  – Ex company, personnel, maintenance and operation, projects and product

• Indication of the customer’s experience of the company in relation to others on the market

• Criticised for only measure expectations not what the customers really wants

• Do not bring any information of how the company should act to keep the product/service attractive on the market
SCI aspects in Real Estate Organisations

• Company (REO)
  – Services, organisational performance, recommend the company, information distribution, affordable services, rent, overall judgment, opportunity to impact

• Personnel
  – Availability, competence and problem solving skill for the end-user and its organisation, service minded

• Maintenance and operation
  – Maintenance, service recovery management, immigration, operation security, external environment, safety in the neighbourhood

• Project
  – Planning, conduction, follow up, time and costs

• Product
  – Space standard, comfortable, indoor climate, entrance, functionality

• Comments and opinions
EcoProP – support the identification of space and activity specific needs
EcoProP – support the identification of space and activity specific needs

VTT building properties classification

C COST AND ENVIRONMENTAL PROPERTIES
C1 LIFE CYCLE COSTS
  C1.1 Investment costs
  C1.2 Operation costs
  C1.3 Maintenance costs
  C1.4 Demolition and disposal costs
C2 ENVIRONMENTAL PRESSURE
  C2.1 Biodiversity
  C2.2 Resources
  C2.3 Emissions
EcoProP – support the identification of space and activity specific needs

Main functionalities

- Requirement profile
- Reporting
- Environmental pressure
- Life cycle costs

COMPARE
PUBLISH
LCA
LCC
CREDIT – Construction and Real Estate – Developing Indicators for Transparency

1. Costs, price and life cycle economy (LCE)
2. Location, plot, region and country (Product performance)
3. Building and space performance (Product performance)
4. Building part and product performance (product performance)
5. Facility performance in operation and use (process performance)
6. Process performance in design and construction (process performance)
7. Impact environmentally, socially and economically
<table>
<thead>
<tr>
<th>Indicators facets</th>
<th>User Need</th>
<th>Brief</th>
<th>Design</th>
<th>Construction</th>
<th>FM</th>
<th>User Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Costs, Price, LCE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Location</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Building performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Building part performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Facility performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Process performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Impact environmentally, socially and economically</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Example of indicators from CREDIT

Security and Safety
• Express the costs of ensuring the needed levels of safety and security such as guard agency, surveillance, lock systems etc.
• Measure: Currency per unit e.g. €/m² or €/employee

Access to public transport
• Express the presence and proximity of public transportation in the building’s neighbourhood.
• Measure: meters or minutes of walk, number of transportation types, intervals or frequency, indication on a map or e.g. in five classes:
  – Class 1: public transportation connection within 500 m, good connection and frequency
  – Class 5: no public connection within 500 m
Implementing results

Benchmarking
Improve efficiency
• Fill gaps
• Improve quality of productivity
• Decreased costs increased revenues

Benchlearning
Develop competence
• Culture change towards a learning organisation
• Increased understanding for processes, codifying success factors
• Changed behaviours and attitudes

Improved results: operationally and strategically
Summary: Benchmarking

- Identify and measure current practice
- Learning and improvement
- Comparisons

Diagram:
- Building parts
- Building and rooms
  - a) Construction process
  - b) Facility management
  - c) Applying new
  - d) Innovation, learning and experiences