

Applicability of Maturity Assessment

for Sustainable Construction



Organisers:



International Co-owners:



Sustainable Buildings and Climate Initiative
Promoting Policies and Practices for Sustainability



You can't manage what you don't measure

Peter Drucker
1909 - 2005
Austrian-born American management
consultant, educator, and author



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and Climate Initiative
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Contents

- Sustainability Assessment
- Process Model
- Application Example
- Summary



Organisers:



International Co-owners:

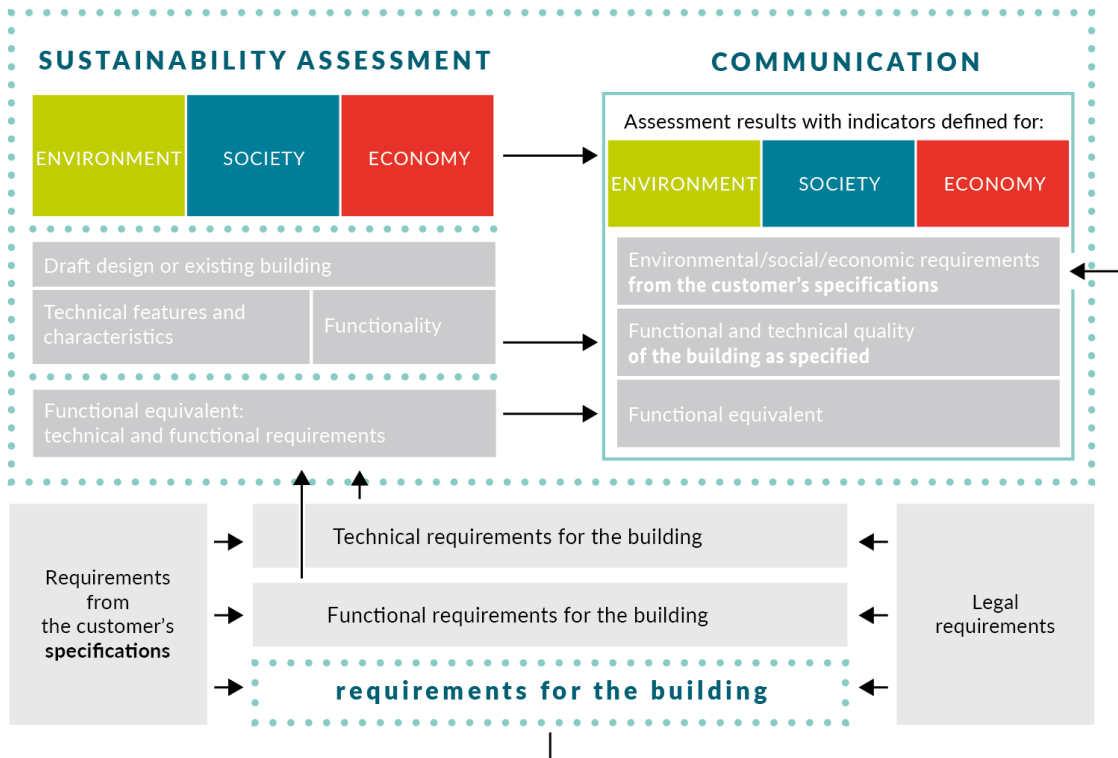


Sustainable Buildings and Climate Initiative
Promoting Policies and Practices for Sustainability



Global Alliance
for Buildings and
Construction

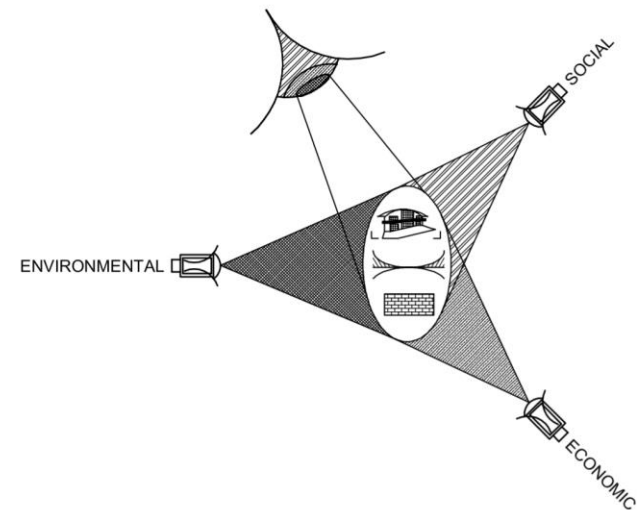
Assessment Concept



(Quelle: AGNHB according to CEN/TC350)

Sustainability in building construction — General principles

Développement durable dans la construction — Principes généraux



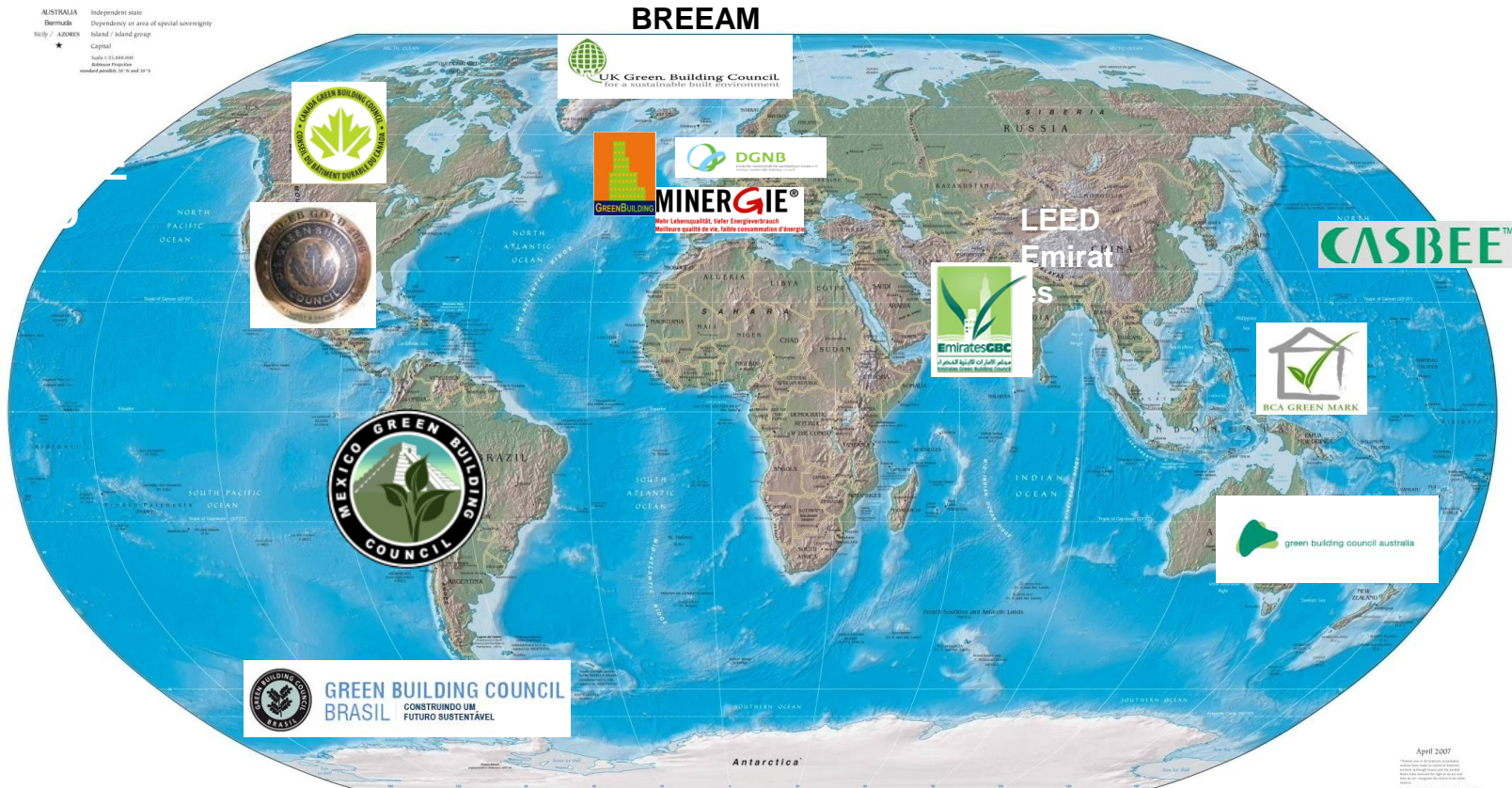
Reference number
ISO 15392:2008(E)

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Building Certification Systems

Physical Map of the World, April 2007

AUSTRALIA Independent state
 Bermuda Dependency or area of special sovereignty
 Sicily / ARKONIS Island / Island group
 ★ Capital
 Scale: 1:11,188,000
 Reference: Wikipedia
 standard position: 30° W and 10° S



(Quelle/Visualisierung: IMBT, 2011)



H. Kreiner

Organisers:



建造業議會



香港綠色建築議會



International Co-owners:



advanced

Applied Certification System

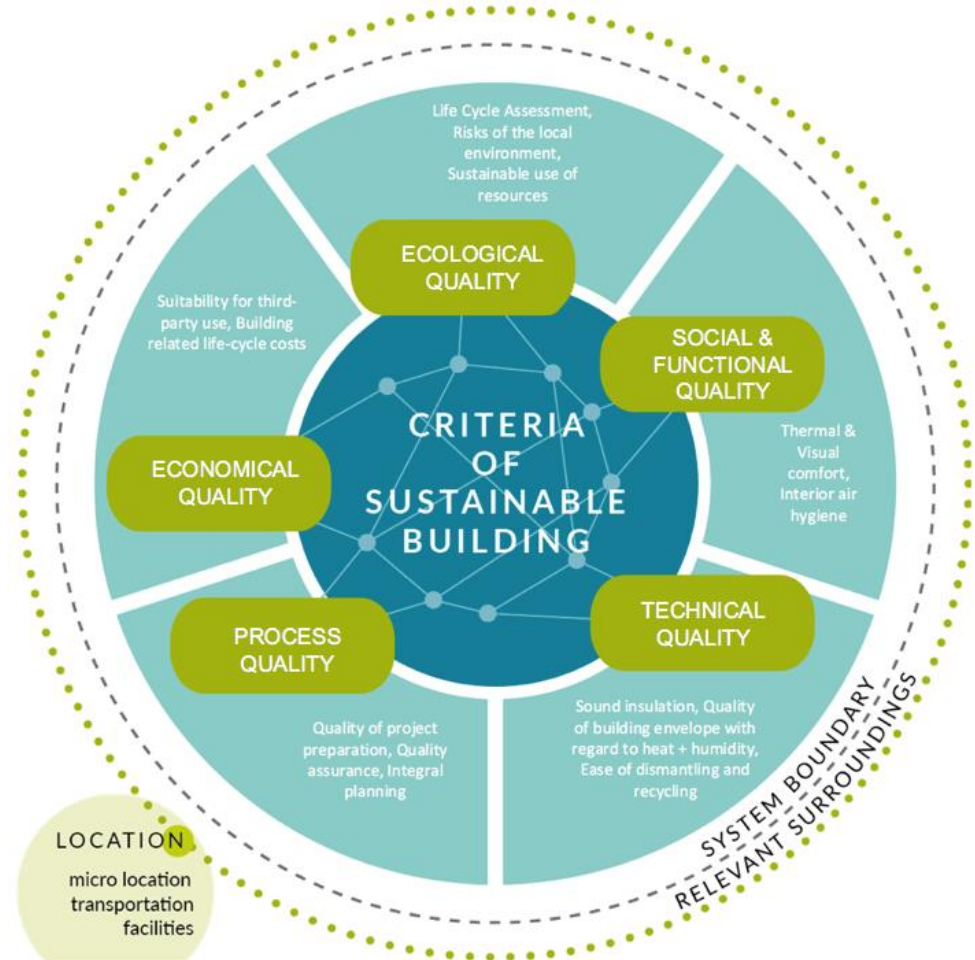


DGNB

Deutsche Gesellschaft für Nachhaltiges Bauen
German Sustainable Building Council

Weighting:

- **Environmental Quality** 22,5%
- **Economical Quality** 22,5%
- **Social & Functional Quality** 22,5%
- **Technical Quality** 22,5%
- **Process Quality** 10,0%



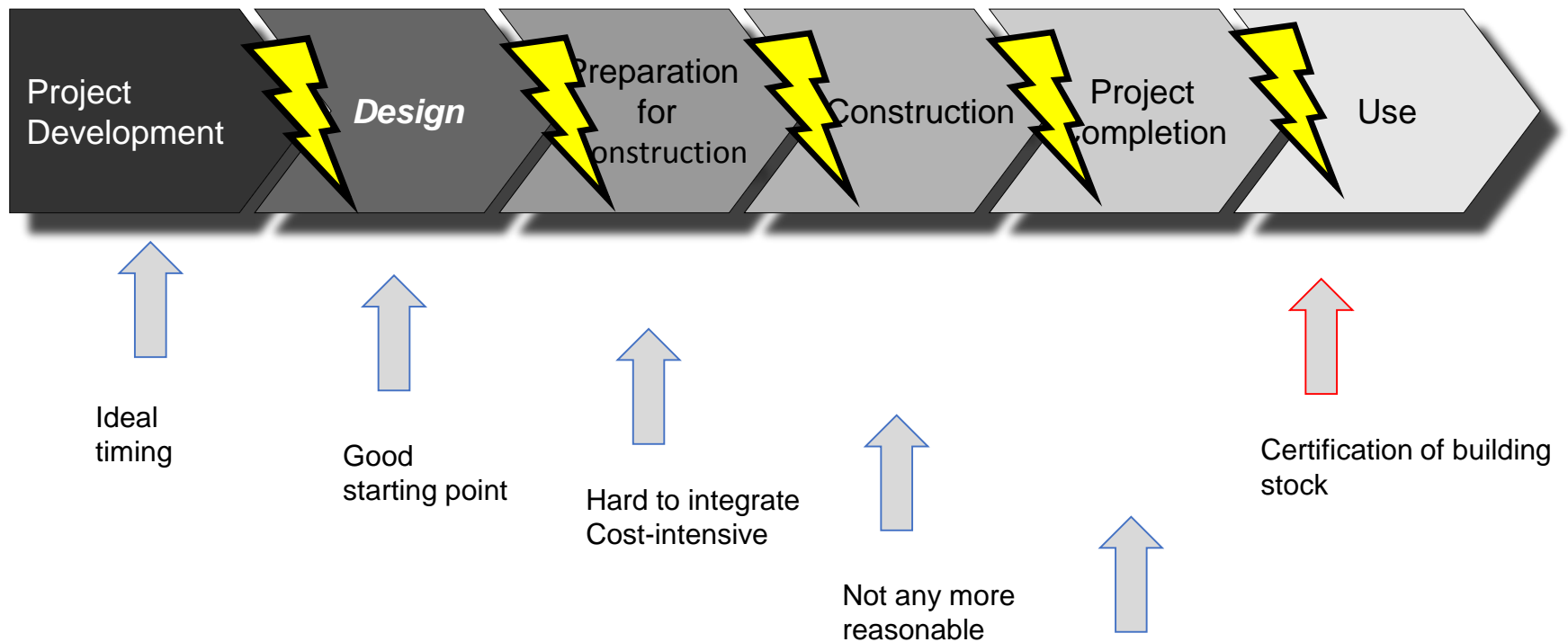
Organisers:



International Co-owners:



Current Situation



Organisers:



International Co-owners:



Status-Quo

Holistic Maturity Assessment and Monitoring Tools

- Stakeholder Goals
- Sustainability Criteria Interaction
- Identification of relevant Processes
- Quality of Process Implementation



Organisers:



International Co-owners:

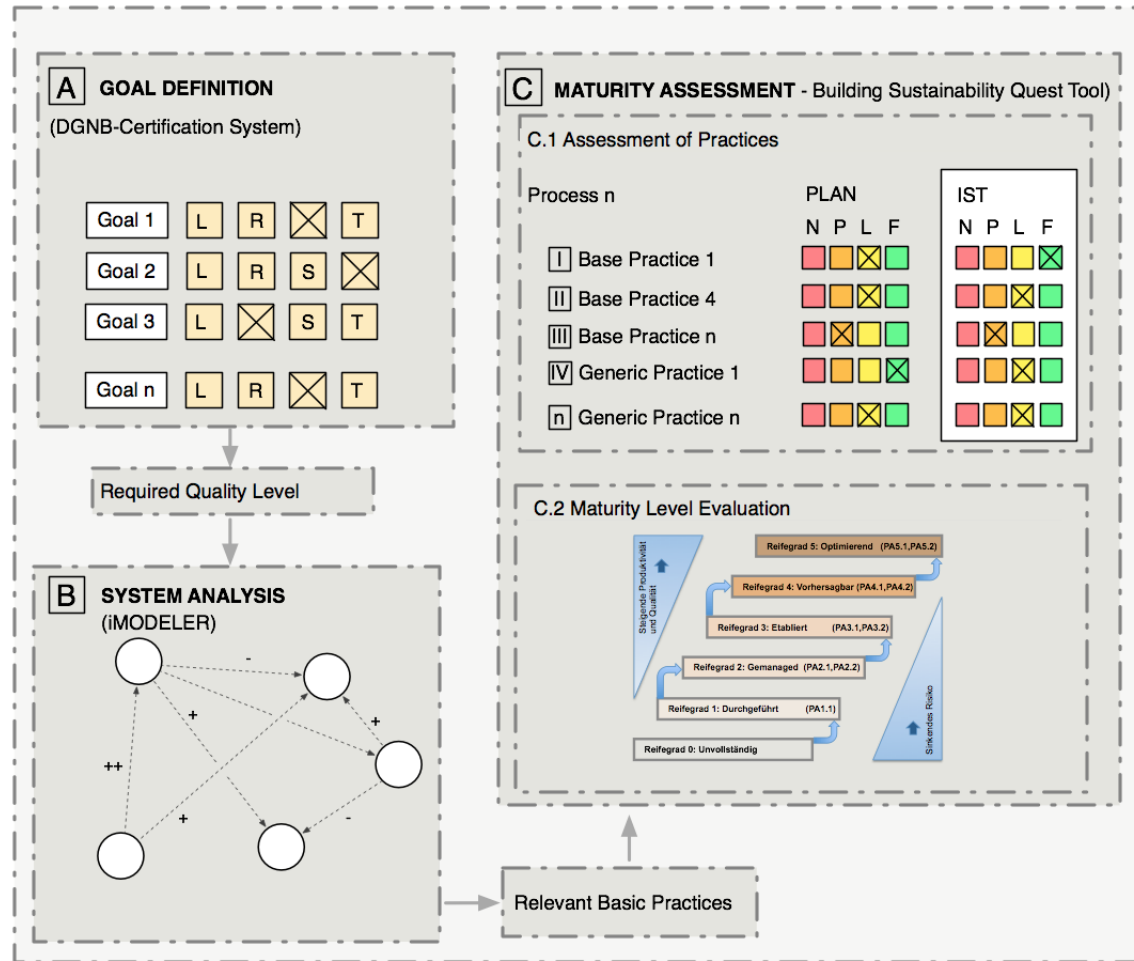


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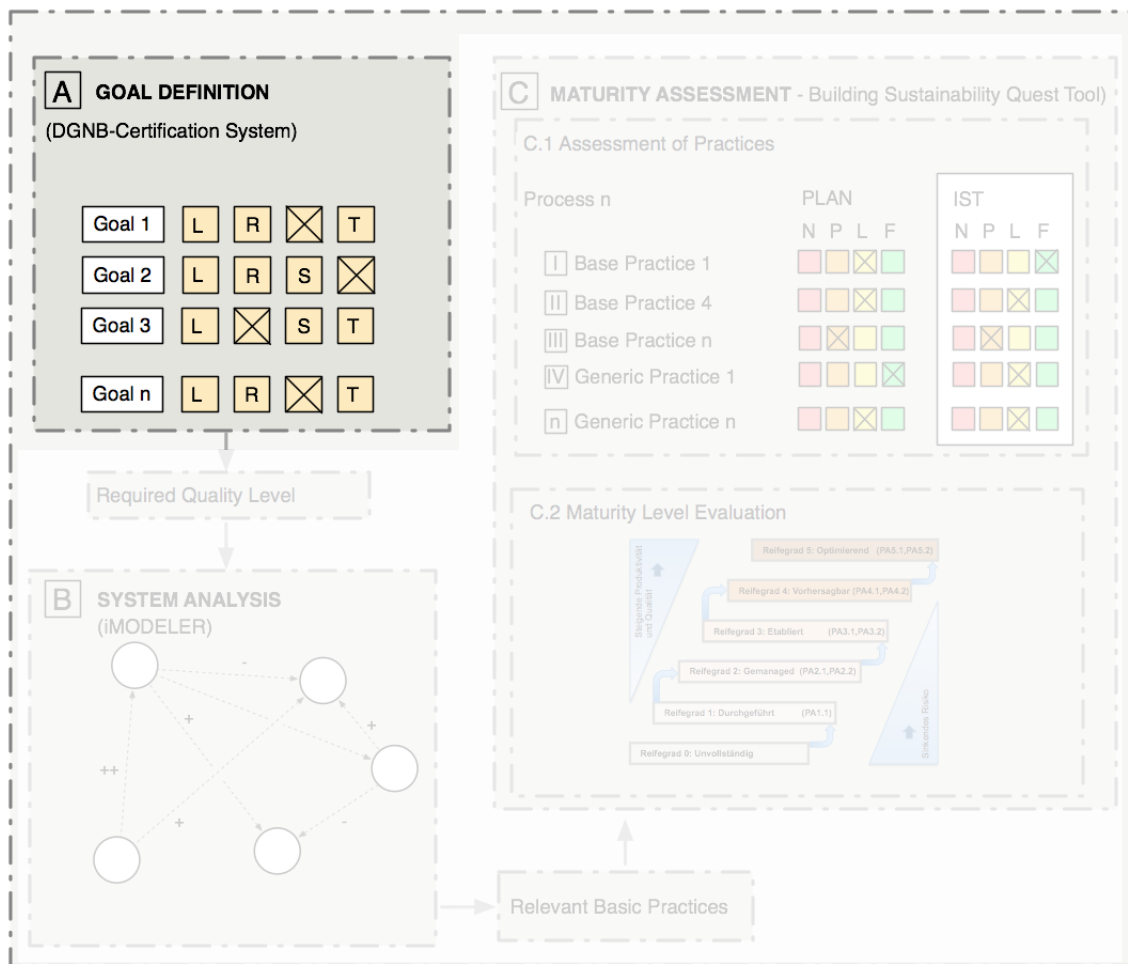
Process Model

- A – Goal Definition
- B – System Analysis
- C1 – Assessment of Practices
- C2 – Maturity Level Evaluation



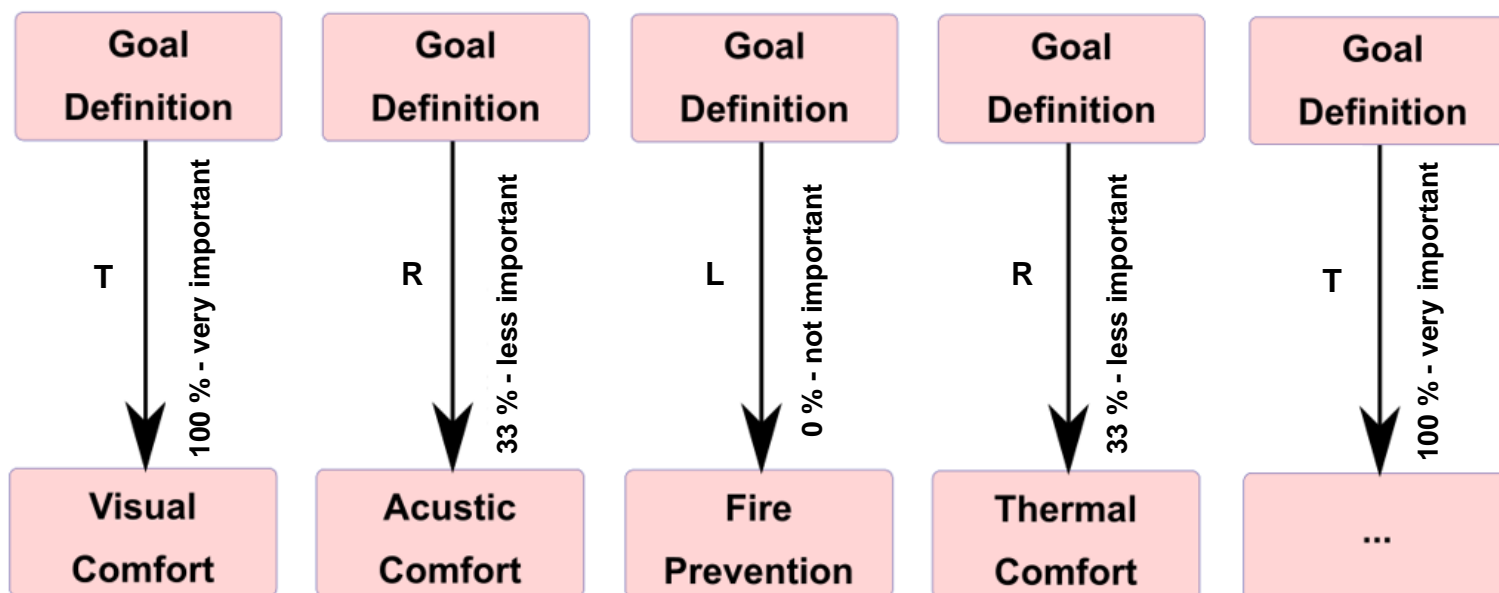
A – Goal Definition

- Stakeholder Requirements
- 4 Quality Levels



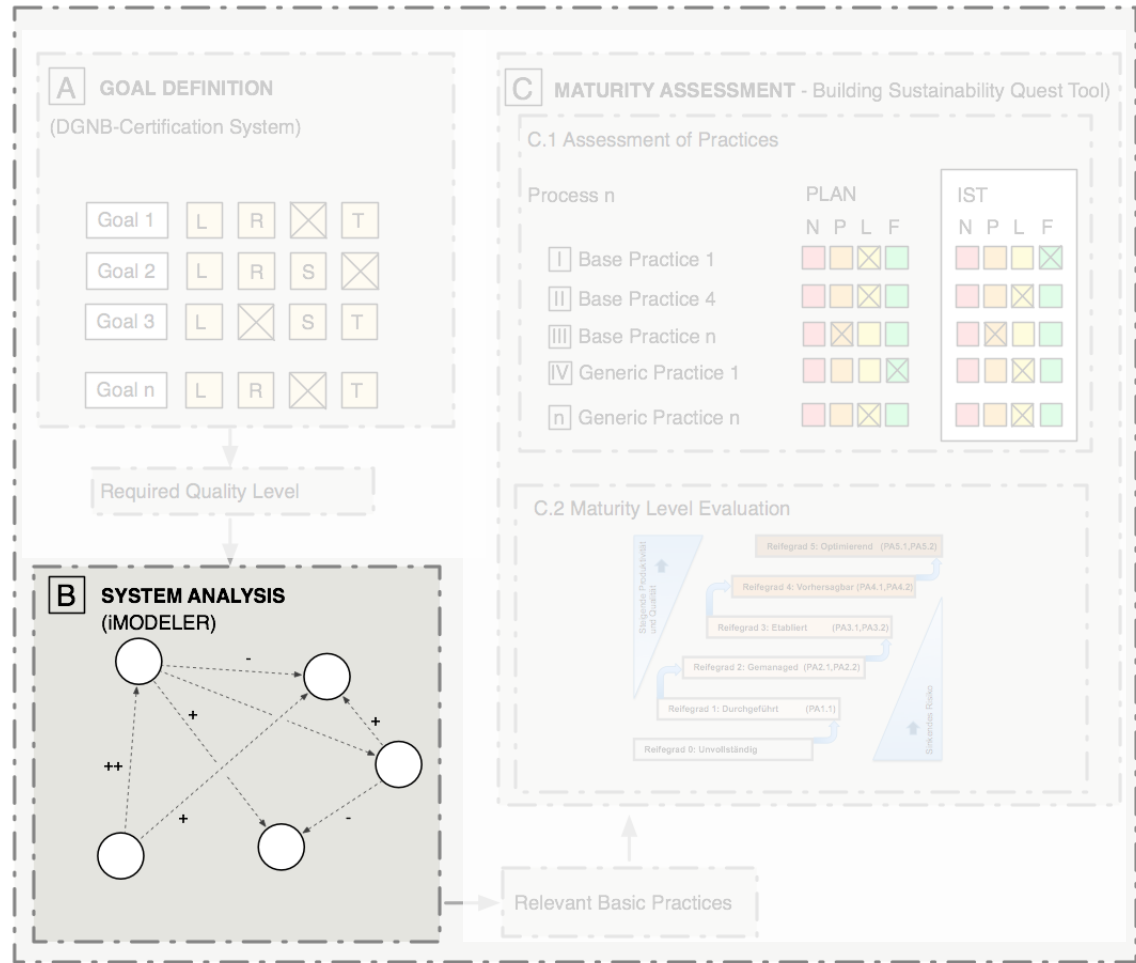
A – Goal Definition

Result: Stakeholder Requirements



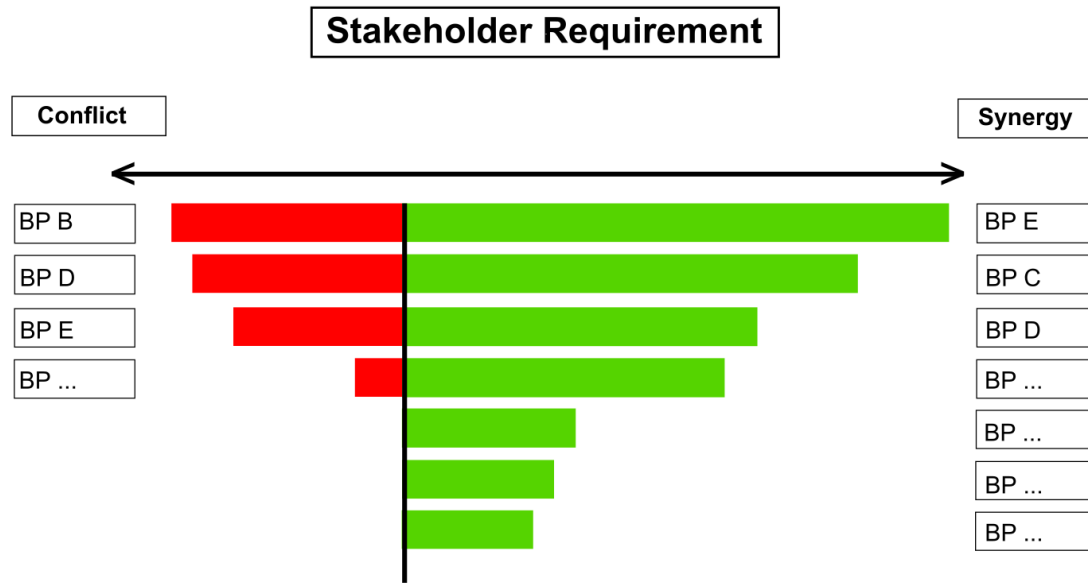
B – System Analysis

- Systemic Approach
- Causal Loop Investigation



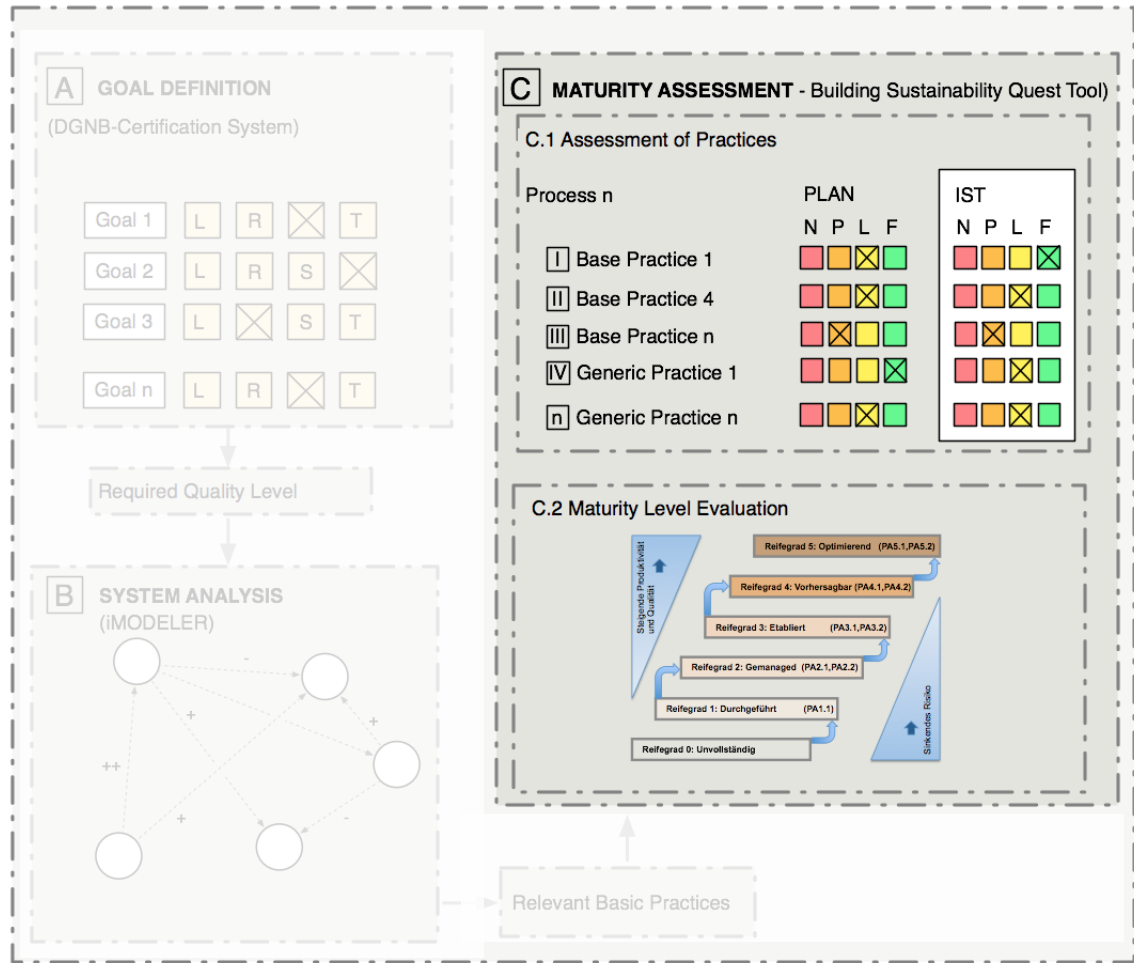
B – System Analysis

Result: Relevant Practices



C – Maturity Assessment

- Assessment of Practices
- Maturity Level Evaluation



C – Maturity Assessment

- SPiCE (**ISO/IEC 15504-5**) - *Software Process Improvement and Capability Determination*
- Development of Process Assessment Model
 - Definition of Processes
 - Process Attributes
 - Base Practices
 - Generic practices
 - N-P-L-F – scale
- Definition of Maturity Assessment Scale (Maturity Levels)

C – Maturity Assessment

RAK.1 Barrierfreiheit

Description of Process

Ungenügend 1.1 | Planung 2.1 | Resultate 2.2 | Prozessdefinition 3.1 | Prozessrealisation 3.2 | Kennzahlen 4.1 | Steuerung 4.2 | Prozessänderung 5.1 | Prozessverbesserung 5.2

79 % | 100 % | 100 % | 0 % | ? % | ? % | ? % | ? % | ? % | ? %

Alle | Sortiert | Allgemeine Fragen

Capability Level

Alle Prozesse | CL max | CL | State

- Allgemein.2 Mitarbeiter
- Allgemein.3 Mitwirkung / Beteiligung
- Allgemein.4 Qualitätssicherungssysteme
- Allgemein.5 Ihre Kommentare, Anregungen

Definition of Assessment Goals

- Größtmögliche Barrierfreiheit für Menschen mit motorischen und sensorischen Einschränkungen.
- Ausschluss eines Gebäudes aus der Zertifizierung, welches nicht grundsätzlich barrierefrei zugänglich ist oder eine gleichberechtigte Teilnahme aller Menschen in öffentlichen Bereichen ermöglicht.
- Das gesamte Gebäude (>95% NGF) ist nach geltender Normung barrierefrei.

Anmerkungen: | Stärken:

Geben Sie Ihre Notizen hier ein... | Geben Sie Ihre Notizen hier ein...

Assessor (SWOT)

Basispraktiken:

N P L F RAK.1.BP1 Barrierfreiheit grundsätzlich gewährleisten.

Barrierfreiheit nach geltender Normung im öffentlich zugänglichen Bereich muss

Assessment Area

Sprache der Rechtschreibprüfung:



C – Maturity Assessment

Process Attributes



Base Practices

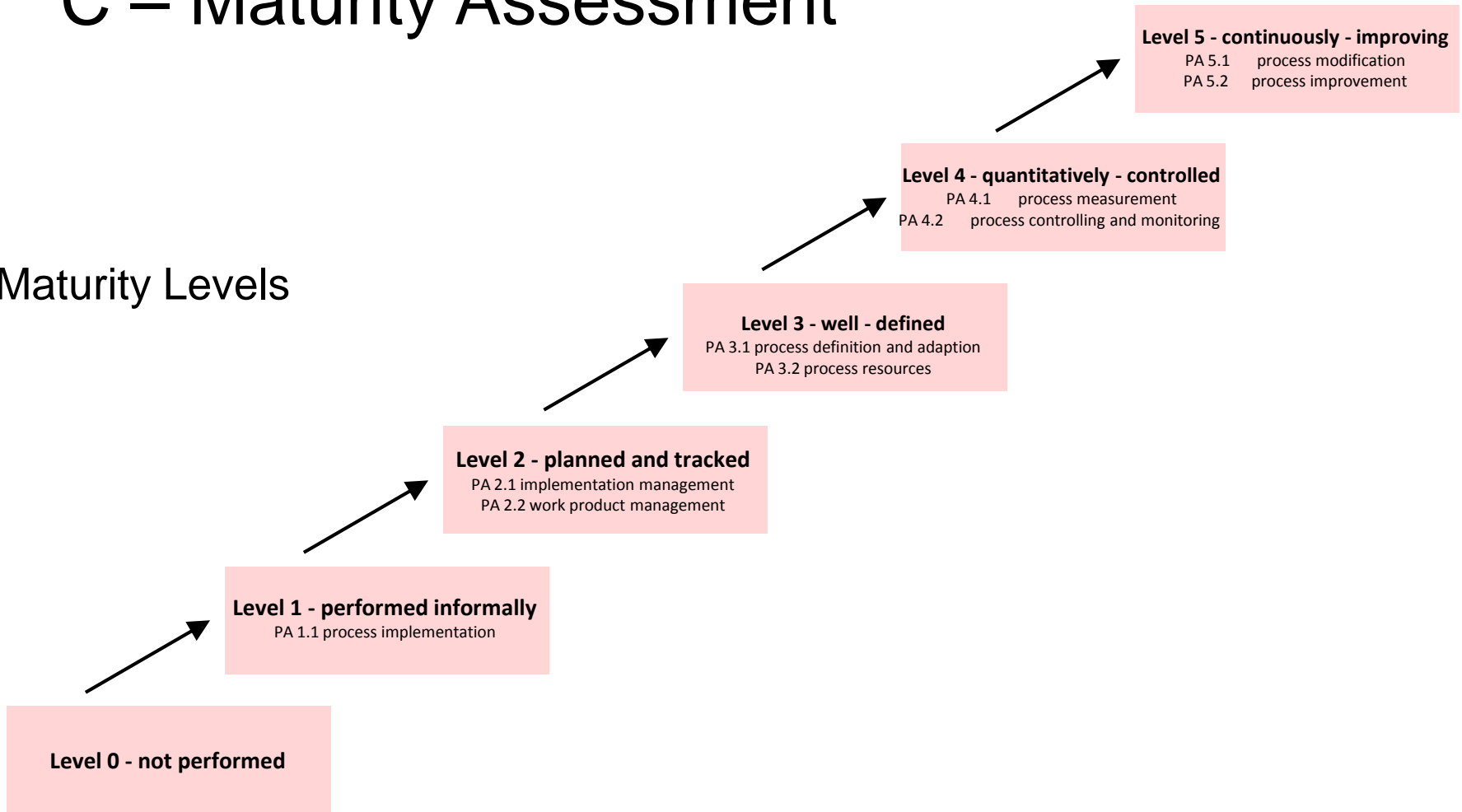
Generic Practices

N – P – L – F Scale

- N** Not achieved (0 - 15%)
- P** Partially achieved (> 15 - 50%)
- L** Largely achieved (> 50 - 85%)
- F** Fully achieved (> 85 - 100%)

C – Maturity Assessment

Maturity Levels



Organisers:



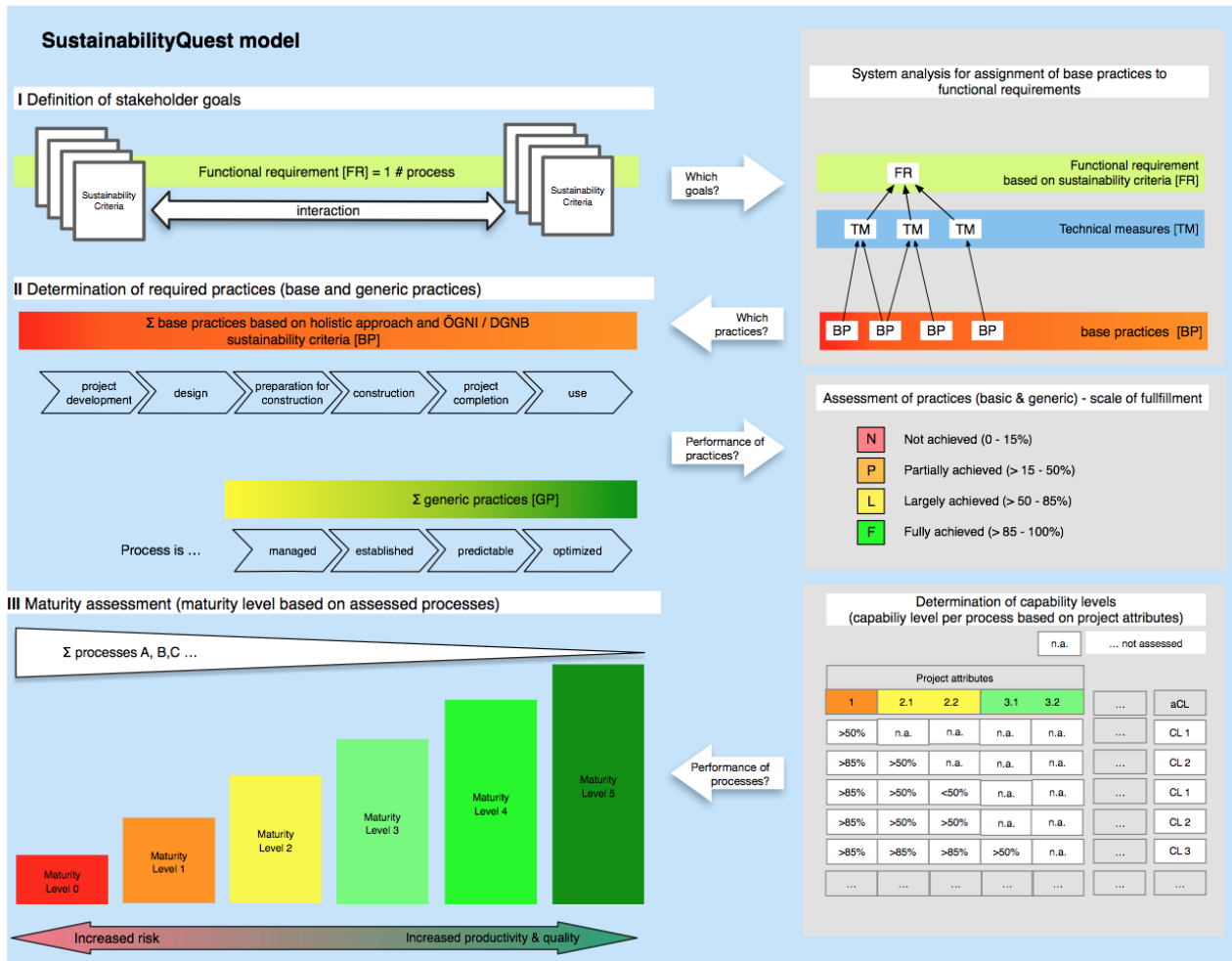
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Wrap Up

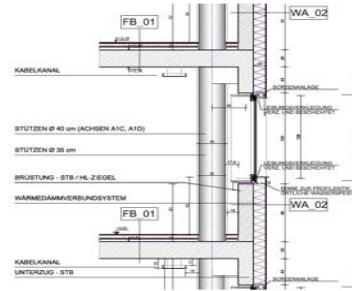


Application

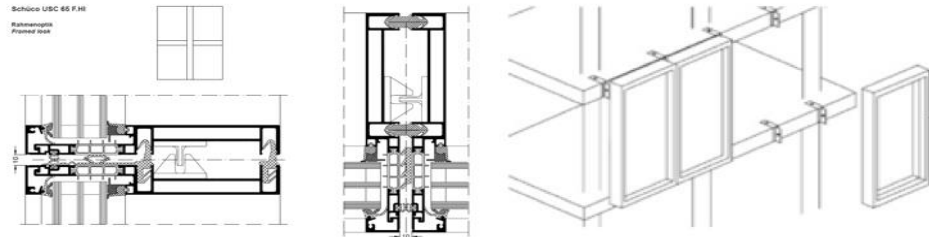
Case Study

- Comparison of different Façade Types

WDVS - Karmeliterhof



Pfosten-Riegen Fassade



UNAB - Paneel



Application

Stakeholder Requirements

- Visual Comfort
- Thermal Comfort
- Sound Insulation
-

Criteria	Description	Weighting
LCA ⁶	Life Cycle Assessment	13,5%
C6	Risks to the local environment	3,4%
C8	Sustainable use of resources / wood	1,1%
C14	Drinking water demand and volume of waste water	2,3%
C15	Space demand	2,3%
LCCA	Building related life-cycle costs	13,5%
C17	Suitability for third-party use	9,0%
C18	Thermal comfort in the winter	1,6%
C19	Thermal comfort in the summer	2,4%
C20	Interior air hygiene	2,4%
C21	Acoustic comfort	0,8%
C22	Visual comfort	2,4%
C23	User control possibilities	1,6%
C24	Quality of outdoor spaces	0,8%
C25	Safety and risk of hazardous incidents	0,8%
C26	Handicapped accessibility	1,6%
C27	Space efficiency	0,8%
C28	Suitability for conversion	1,6%
C29	Public access	1,6%
C30	Bicycling convenience	0,8%
C31	Assurance of design and urban development quality in a competition	2,4%
C32	Percent for art	0,8%
C33	Fire prevention	4,5%
C34	Sound insulation	4,5%
C35	Quality of building envelope with regard to heat and humidity	4,5%
C40	Ease of cleaning and maintenance	4,5%
C42	Ease of dismantling and recycling	4,5%
C43	Quality of project preparation	1,3%
C44	Integral planning	1,3%
C45	Optimization and complexity of planning method	1,3%
C46	Evidence of sustainable aspects in call for and awarding of tenders	0,9%
C47	Creation of conditions for optimal use and management	0,9%
C48	Construction site / construction process	0,9%
C49	Quality of contractors / prequalification	0,9%
C50	Quality assurance for construction	1,3%
C51	Commissioning	1,3%
Sum		100%



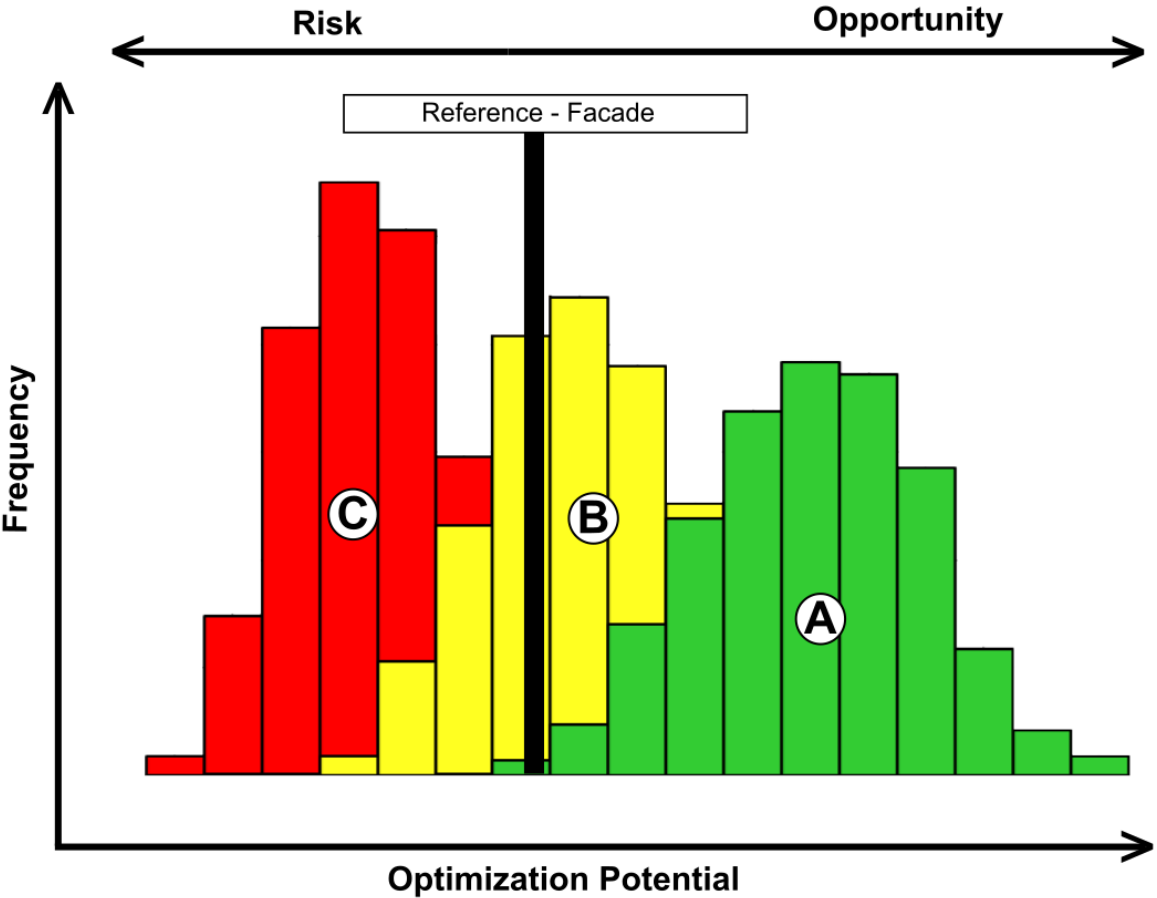
Organisers:



International Co-owners:



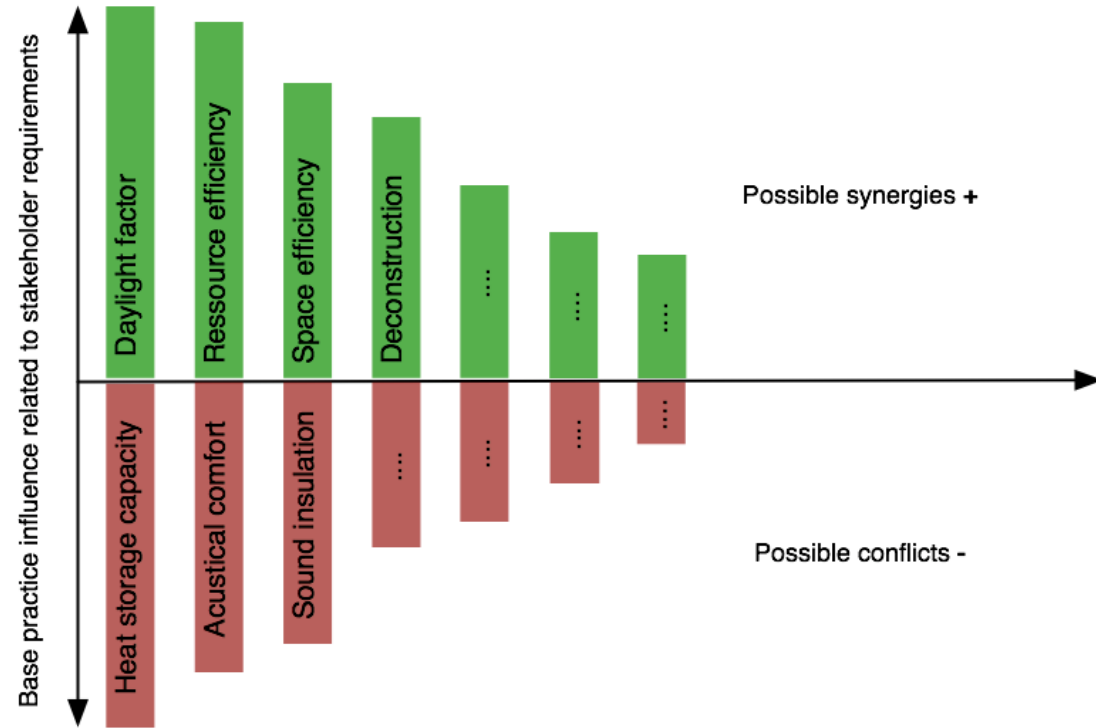
Optimization Potential



Application

System Analysis

- Slendering the Building Envelope



Application

Assessment of Practices

- N – P – L – F
- Compared to the Reference Scenario

Base Practices

Basispraktik (BP) / Basispraktik-Prozess (BPP)

L THE.1.BP.1 Endenergiebedarf reduzieren

Mögliches Synergiepotenzial mit:

- VIS.2 - Sonnenschutz
- VIS.3 - Kunstlichtverteilung
- THE.3 - Oberflächentemperatur
- THE.4 - Zugluft
- EFN.1 - Einflussnahme Temperatur
- WFQ.1 - Energieeffizienz TGA
- WFQ.2 - Energieeffizienz Konstruktion
- WFQ.3 - Thermische Gebäudehülle
- WFQ.4 - U - Werte
- WFQ.5 - Dichtheit Gebäudehülle

Mögliches Zielkonfliktpotential

- VIS.1 - Tageslichtquotient

Der U-Wert des UNAB-Panels liegt unter dem Wert des HWB.

Zusätzlich kommt es zu einer Erhöhung der Solarmodule.

Hinweis:

Sommer- und Winterfall werden separat betrachtet.

Hinweis:

niedrigere Systemtemperaturen durch die Reduzierung des Energiebedarfs.

Generic Practices

Generische Praktiken

N GP 3.1.1 Standardisiertes institutionsspezifisches Ablaufschemata (d.h. projektübergreifend und eventuell prozessgebietsübergreifend anwendbar) für die Berücksichtigung von Nachhaltigkeitsaspekten zur Definition eines Standardprozesses liegt vor
Es liegt kein standardisiertes Ablaufschema vor.

N GP 3.1.2 Dieser definierte Standardprozess wird umgesetzt
Da kein standardisiertes Ablaufschema vorliegt, kann der Prozess nicht nach diesem umgesetzt werden.

L GP 3.1.3 Prozessleistungsdaten werden gesammelt (z.B. Erhebung von Prozessdauer, Ressourcenbedarf, mögliche Risiken)
Es ist geplant die Durchführung des Prozesses zu dokumentieren und zu überwachen. Ein derartiges Konzept befindet sich noch in Ausarbeitung.

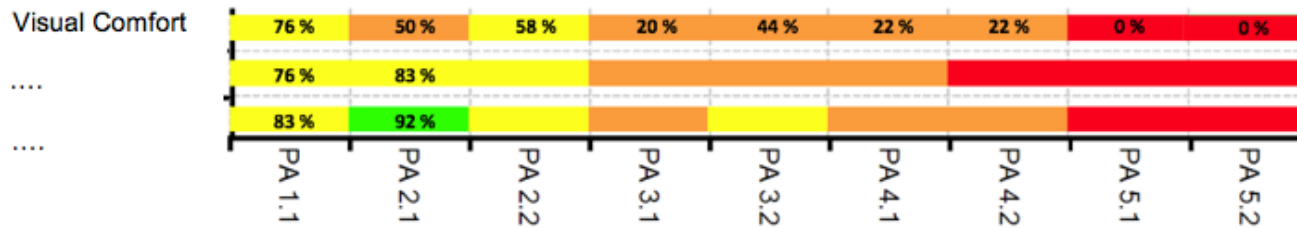
N GP 3.1.4 Der Standardprozess wird durch kontinuierliches Einpflegen der erhobenen Prozessleistungsdaten verfeinert
Es liegen noch keine Prozessleistungsdaten vor.

P GP 3.1.5 Ein Risikomanagement wird vorbereitet nach dem Schema: Risiken erkennen, Risiken analysieren, Risiken abschwächen
Neben der Dokumentation und Überwachung des Prozesses wird auch ein Konzept zur Risikominimierung erstellt.

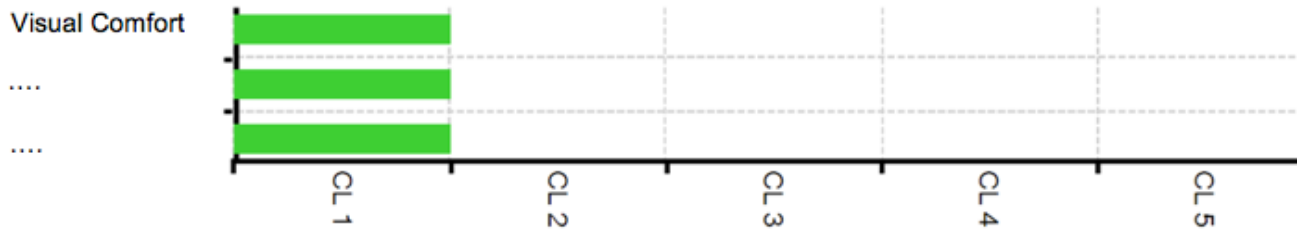
Application

Assessment of Practices

Fulfilment of Process Attributes



Capability Level



$$\sum \text{Capability Levels} = \text{Maturity Level}$$



International Co-owners:



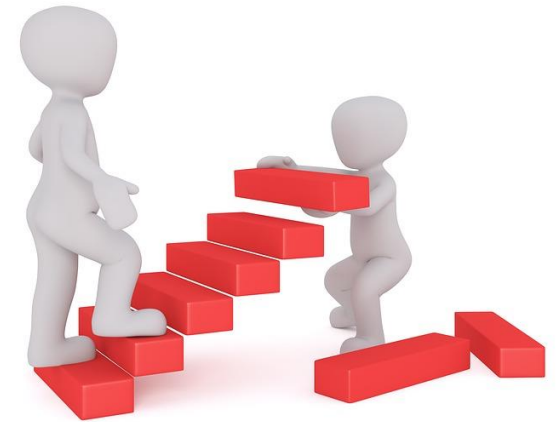
Sustainable Buildings and Climate Initiative



Global Alliance for Buildings and Construction

Summary

- Identifying relevant Practices for the Fulfilment of Stakeholder Requirements
- Knowledge about Coherences between Practices and Functional Requirements
- Highlighting Synergies and Conflicts
- Detection of Optimization Potential of Scenarios
- Knowledge about a Maturity Level of a Sustainability Process



Thank you

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