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The concrete Initiative workshop

Contractor perspective on integrated durability & sustainability

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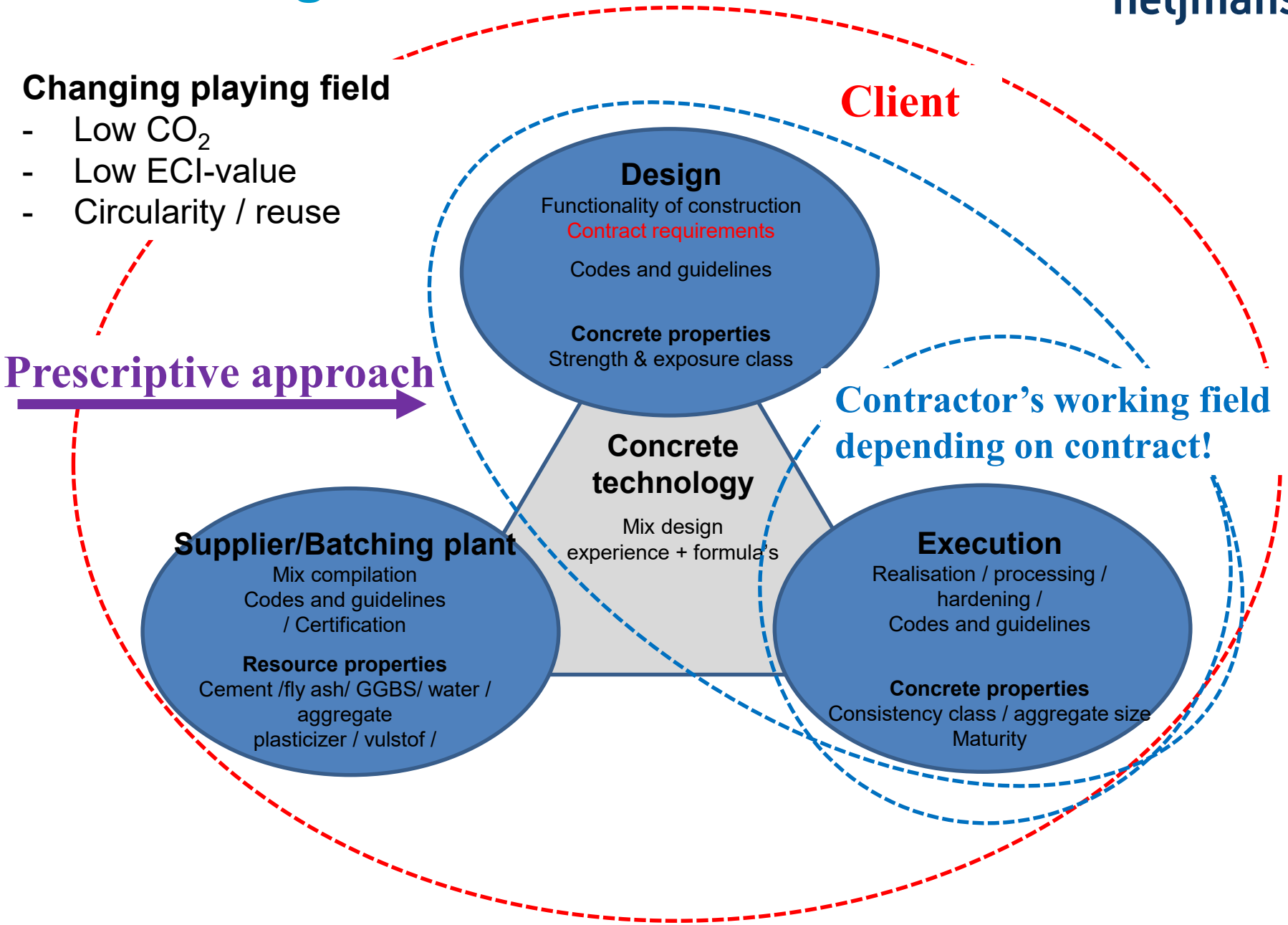
From design to construction

Changing playing field
- Low CO_2
- Low ECI-value
- Circularity / reuse



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Special contracts related to sustainability

In the Netherlands we work on the principle of **"best price quality ratio"** called EMVI. According to your design you can earn a **fictitious discount** on the tender/quotation. The contractor with the lowest sum at the end will get the contract.

Overall trend national and international is to lower the CO_2, the ECI-value and/or primary resources

Result is as low as possible "Environmental Costs Indicator (ECI value)" for concrete as objective!

Concrete structures suffering severe deterioration before end of designed service life are at the end (also) not sustainable!

Goal 1: to be **50% circular** in the construction sector within **2021-2030**
Goal 2: to be **fully circular** in the construction sector in **2050**

Realization of both Sustainability & Durability

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There are (already) indications that there is a discrepancy between “laboratory designed” concrete versus “real” concrete

Indications that the robustness with respect to the execution phase is decreasing ➔ think about the curing conditions and effective curing time that is needed

Al these indications are not **compressive strength** related, but related to the **physical properties** (i.e. porosity, permeability, water absorption) and thus related with durability aspects (after 28 days!).

Codes and guidelines should be updated to our current building demand and moreover be suitable for the future goals with respect to **primary & secondary resources**.

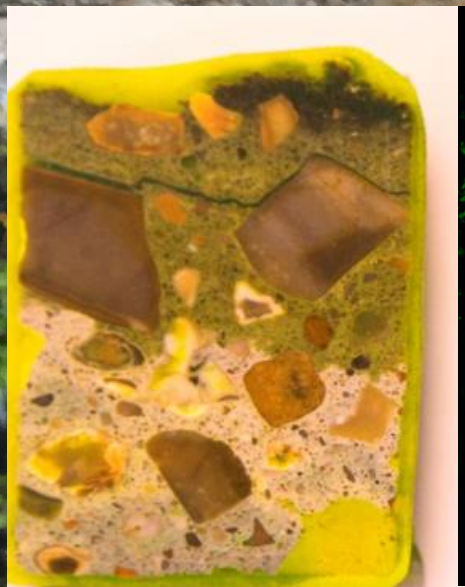
Working as a scientist gives me the freedom to think further than codes and contracts;

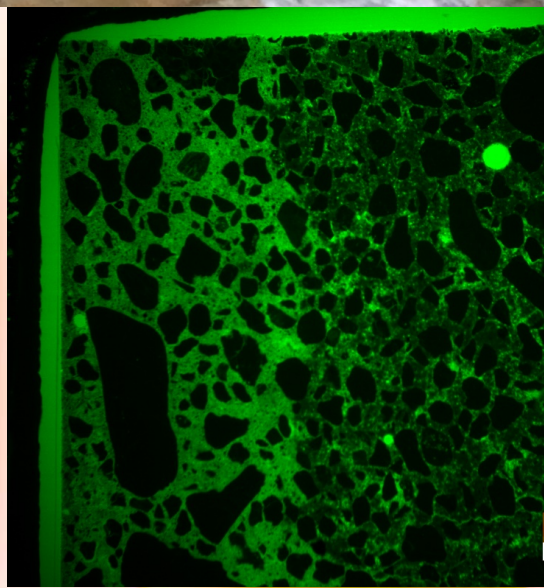
Working for a contractor is based on legally point of view: “according to the code”

Under design !!

Performance x Service life

Environmental Impact





Realization of both Sustainability & Durability

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As contractor we play a role in material consumption and are (partly) responsible for the end result

With the “button” sustainability we **introduced** an **extra** ”button” next to our “**familiar**” durability button. Result is that we are running out our comfort zone and that we have to realize that we have to think about “new” design principles

Performance description

Performance based design

Functional performance of structural components to “**optimize**” the mix-design with respect to: **Sustainability & Durability aspects**

Prove equal performance of a proposed concrete with low ECI-value compared to defined reference concrete

Measurable functional performance characteristics NOT ONLY in laboratory but also on site!

Discussion/Questions?

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