

## Introduction to the Construction Project Management course

**Broad construction industry - Outlook on opportunities, challenges and threats**

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## Course Rationale

This course aims at educating the next generation of Construction industry "reflective" practitioners.

What follows is a brief outlook on the opportunities, challenges and threats they will have to face.

## Understanding today's Construction

The construction industry, and its broader ecosystem, erects buildings, infrastructure, and industrial structures.

Construction is the **biggest industry in the world**, and it is not performing well.

The AEC represents 13 percent of global GDP, but construction has seen a productivity growth of 1 percent annually for the past two decades. Time and cost overruns are the norm, and overall earnings (EBIT) are only around 5 percent.

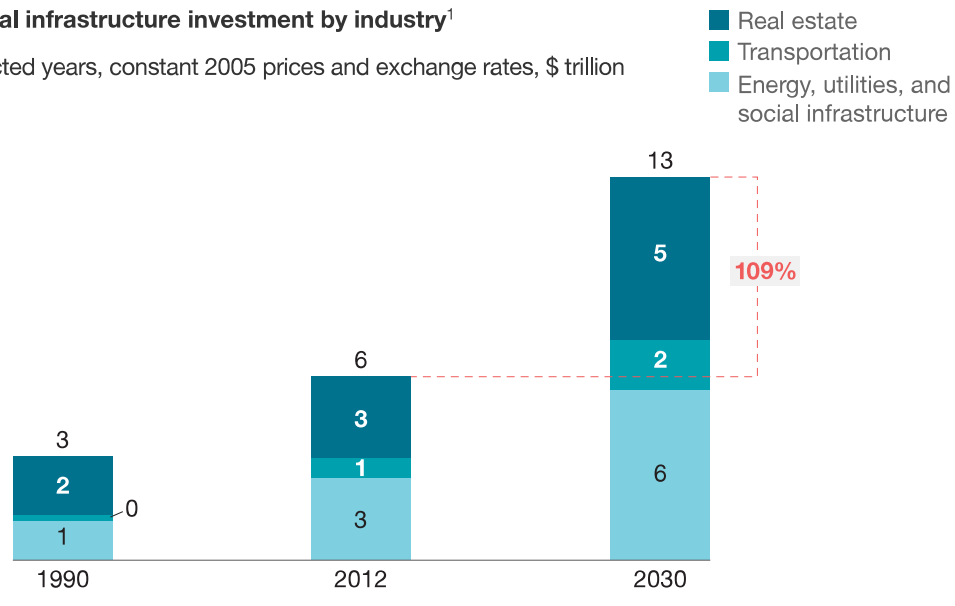
McKynsey, 2020 [The next normal in construction: How disruption is reshaping the world's largest ecosystem](#)

## Industry dynamics

Infrastructure investment will double in the next 15 years.

### Global infrastructure investment by industry<sup>1</sup>

Selected years, constant 2005 prices and exchange rates, \$ trillion



### Megaprojects' share in the future<sup>2</sup>

12% by number of projects  
77% by project value

<sup>1</sup>Forecast assumes price of capital goods increases at same rate as other goods and assumes no change in inventory.

<sup>2</sup>Project award date 2015 and beyond.

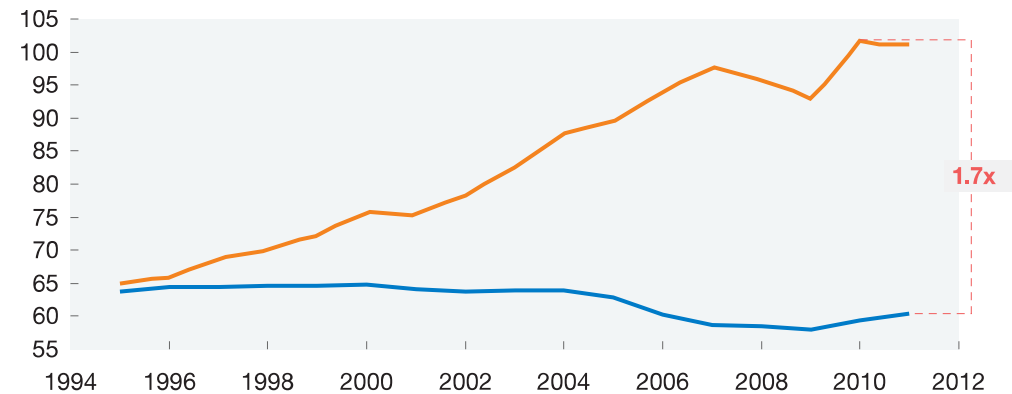
## Productivity gap

Productivity in manufacturing has nearly doubled, whereas in construction it has remained flat.

### Overview of productivity improvement over time

Productivity (value added per worker), real, \$ 2005

\$ thousand per worker

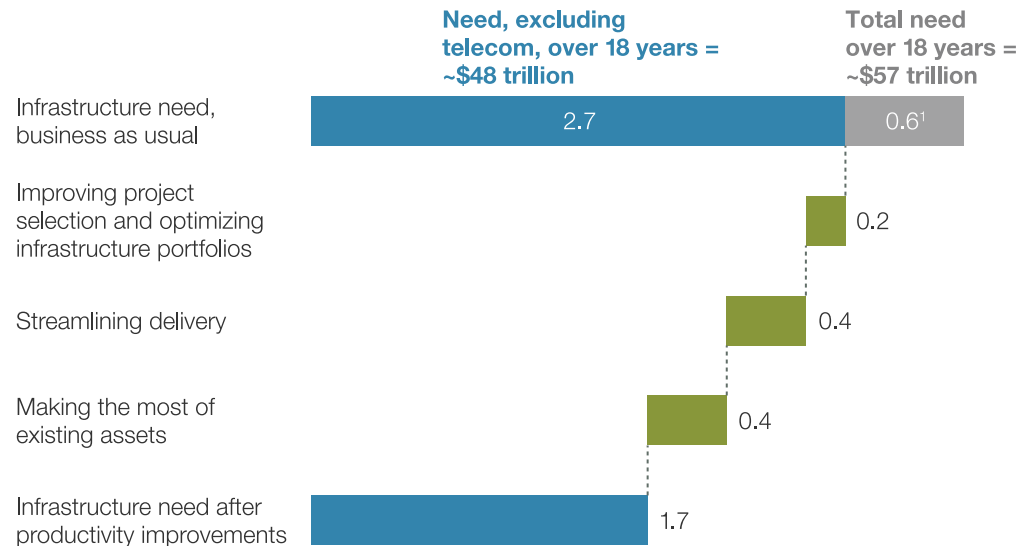


Source: Expert interviews; IHS Global Insight (Belgium, France, Germany, Italy, Spain, United Kingdom, United States); World Input-Output Database

McKinsey&Company

## Effects of possible improvements

Global infrastructure investment, projected yearly average, 2013–30,  
\$ trillion (in 2010 prices)



<sup>1</sup>Required telecom investment beyond scope of study.

Source: McKinsey Global Institute analysis

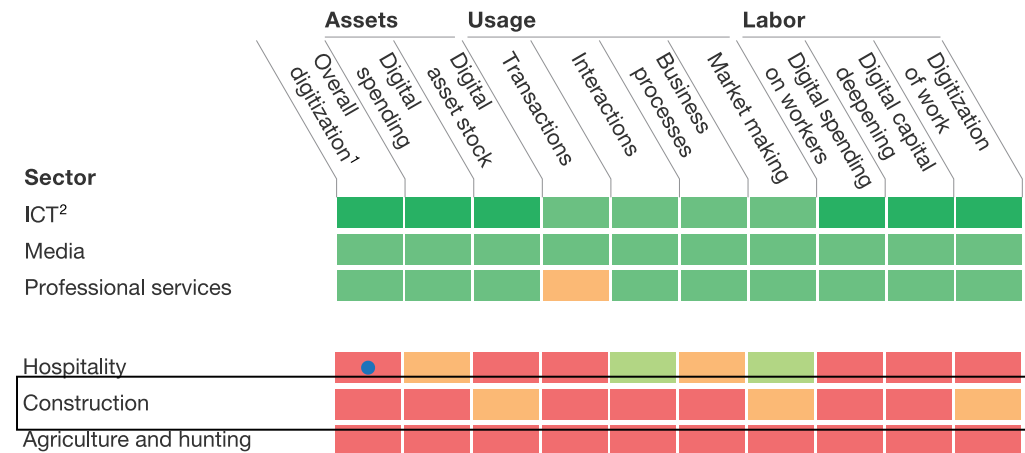
## Digitalization

The construction industry is among the least digitized.

McKinsey Global Institute industry  
digitization index; 2015 or latest  
available data

Relatively low digitization Relatively high digitization

● Digital leaders within relatively undigitized sectors



## Digital transformation

Five trends will shape construction and capital projects.



McKinsey&Company



## Digital transformation

Higher-definition surveying and geolocation

Next-generation 5-D building information modeling

Digital collaboration and mobility

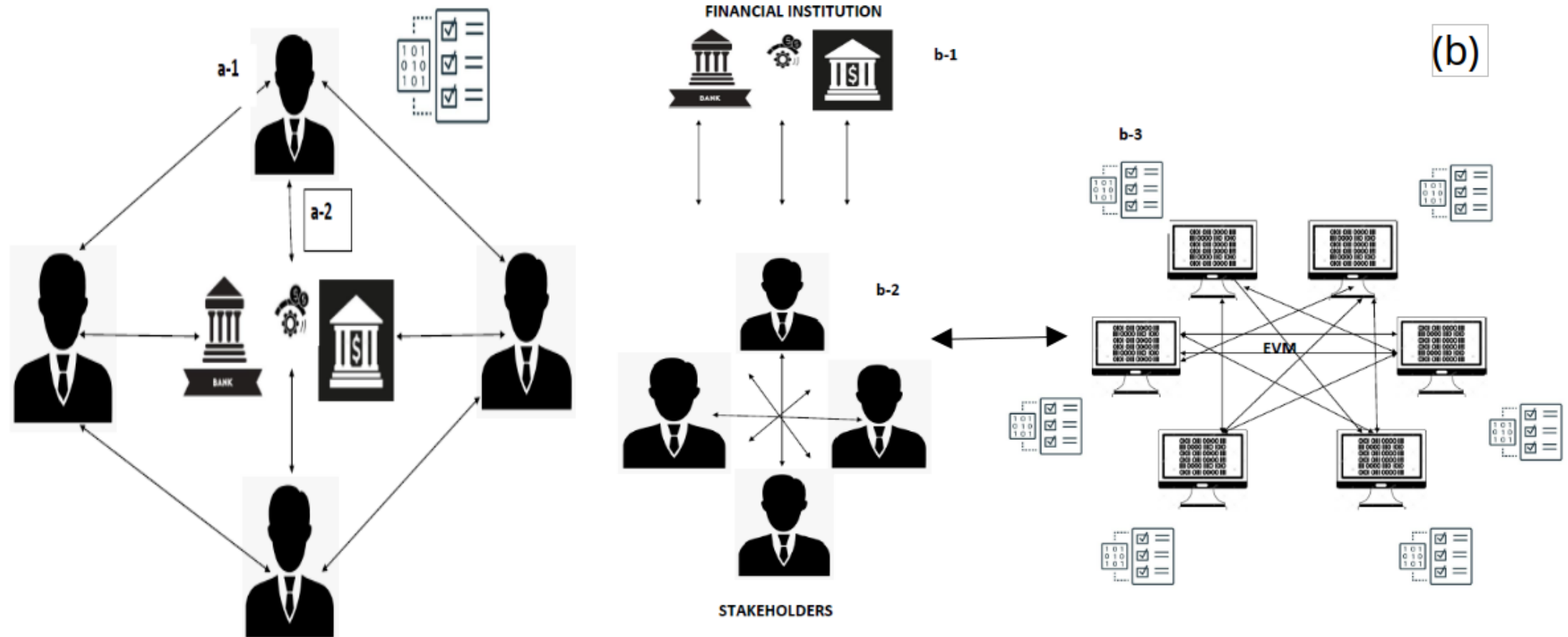
The Internet of Things and advanced analytics

Future-proof design and construction

## Areas of advanced CPM research @ PoliTO pm-lab

- Digital governance by tokens and smart contract
- Construction 4.0

## Digital governance by tokens and smart contract



## Construction 4.0

