

FIG
2018
ISTANBUL



**Presented at the FIG Congress 2018,
May 6-11, 2018 in Istanbul, Turkey**

XVI FIG Congress 2018
6-11 May 2018
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FIG Congress 2018



**EMBRACING OUR SMART WORLD WHERE THE CONTINENTS CONNECT:
ENHANCING THE GEOSPATIAL MATURITY OF SOCIETIES**

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The problem

low tech



Entrenched attitudes



zero progress

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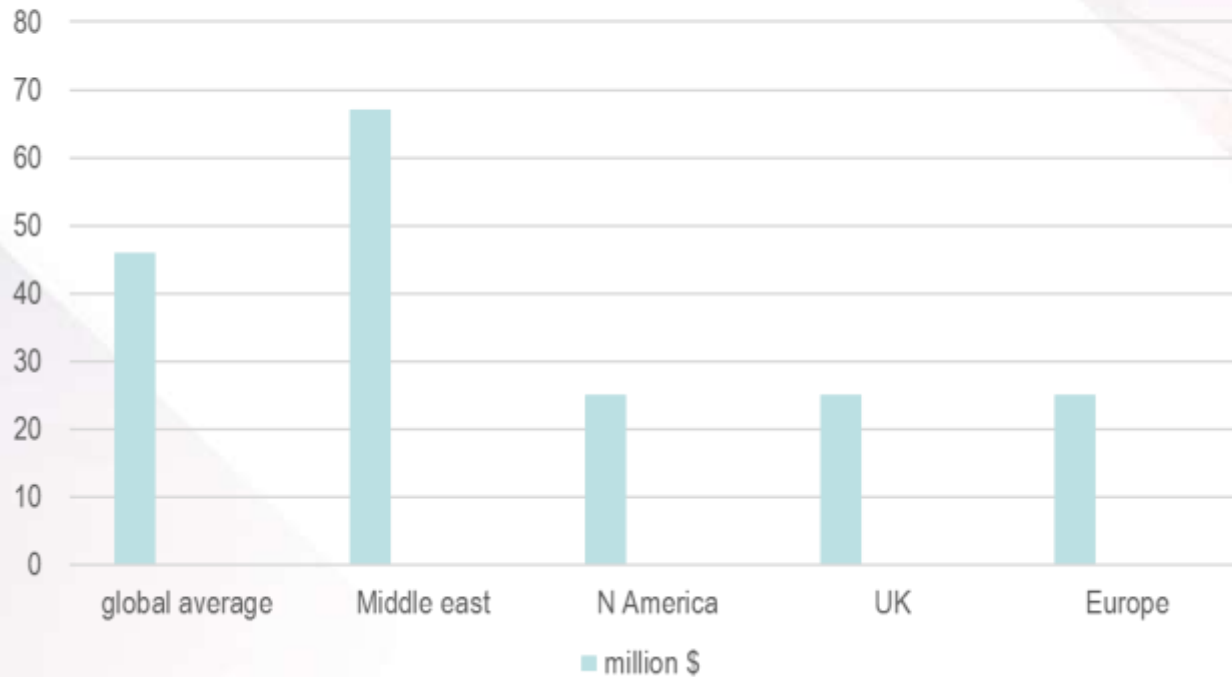
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Average Value of Disputes (Arcadis Global Report 2016)



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So, What Are Smart Contracts?



- The term “*smart contract*” was coined in 1994 by Nick Szabo, a cryptographer who defined it as “*A computerised transaction protocol that executes the terms of a contract. The general objectives of smart contract design are to satisfy common contractual conditions (such as payments terms), minimise expectations and minimise the need for trusted intermediaries*” (Szabo, 1994).

The smart contract process

- Smart contracts allow for a set of instructions to be incorporated into a contract allowing clauses to be self-executing, self-enforcing, or both (Cardeira, 2015)
- The smart contract will set out the requirements and decision inputs (hold points) in order to start a series of if/thens that will execute the terms of the contract between client and different members of the project team, main contractor, sub-contractor to design, monitor, approve, tender, install, certify and take handover of the built asset (Hughes, 2017).

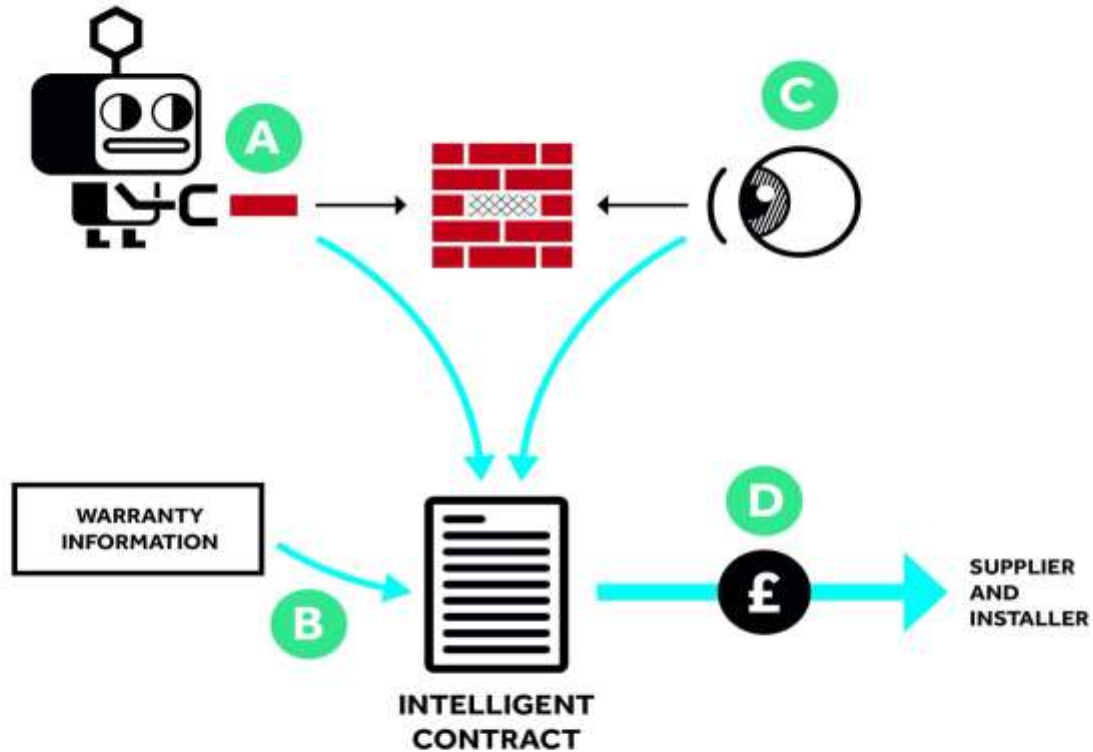


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$$A + B + C = D$$

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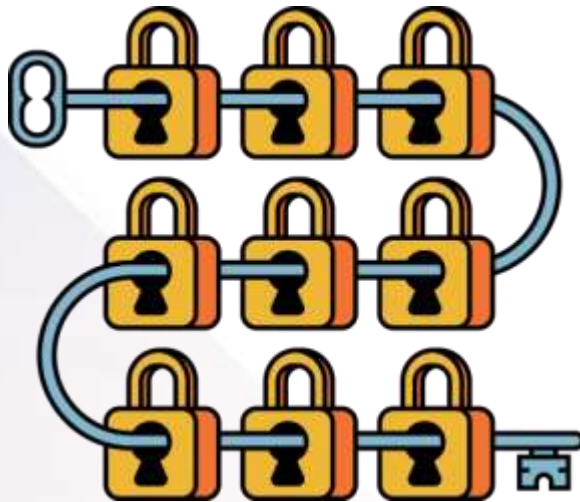


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The intelligent contract

-code is law, law is code



- Transactions and consequences captured on the blockchain.
- Blockchain is immutable and transparent record



How to progress?

- Investigate which contract processes could be optimised through automation while achieving confidence in the process.
- The curiosity within the industry for new innovation has definitely increased.
- Tech is reaching out to construction as never before – open source solutions and new approaches
- Is construction listening? Or do small margins and zero R&D investment prevent engagement?

we're listening



Enablers of smart contracts

- BIM level 7?
- CIC Protocol lightweight
- Multi-party contracts in the future?
- Interoperability still an issue
- OR: IC does not need BIM? Inch-stone approach
- Big data 25 billion sensors by 2020
- Project Bank Accounts
- Prototype for payment arrangements. Dispense with the glass box eventually
- Project insurance. Environment for real collaboration



- 117 responses to a questionnaire from senior managers and commercial staff across construction industry

15th century De Montaigne summed up the value of quoting others *“they express our very own thoughts but with a clarity and psychological accuracy we cannot match...what is shy and confused in us is succinctly and elegantly phrased in them.”*

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The benefits on offer

- Greater accuracy and removal of errors in drafting
- Resolution of disputes on timings and payment
- Building trust
- Reduction in costs

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The drawbacks

- Millions of random events cannot be automated – too many “what ifs”
- Only suitable for factory type production
- Would a computer system have trust?
- Are the cost savings real?
- Security and risk of incorrect coding

Insightful quotes

- *“It is the very complexity that means that automation is essential and not a hindrance.” “Why should a person matter? The facts should.”*
- *“If a smart contract is used as intended then trust and collaboration should be of no real concern as each parties roles and responsibilities would be clearly defined.”*
- *“Newer QSs are much more “technology native” and do understand the processes which underpin this technology.”*
-

Recommendations

- draw the parameters of what is achievable and the incremental steps needed;
- Dispel cynical opinions and fallacies which do not reflect the true picture whilst acknowledging those which are real and present roadblocks
- Draw a line under the computers and trust debate by recognising that the two are not mutually exclusive;
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ANY QUESTIONS?

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