



CONSTRUCTION INDUSTRY COUNCIL  
建造業議會

# DfMA

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# DfX

Welcome

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# DfX

## DfM/A

- It is not:
  - A magic tool
  - A trade mark
  - An empty badge
- It is:
  - A way of thinking and acting
    - Outcome led
    - Plan for success: anticipate



# DfX



# DfX

- A method to overcome an intrinsic lack of knowledge and communication
- You can't be an expert in everything
- Humble collaboration
  - More often than not different disciplines are separated in:
    - Location
    - Time
    - Language
    - Culture
    - Internal targets



# DfX

## DfM Design for Manufacturing

It is meant to:

- Make sure you can produce what you have designed, with minimal effort
- Make sure you can produce:
  - **On time to standard every time**
    - **Repeatability / capability**
- Make sure you can do it **profitably**



# DfX

- What does it take to “make sure”?
- We need to understand other disciplines
- Need to communicate
- Need to be open, collaborate
- Need to anticipate
  - What problems can we expect?
  - What risks do we face?
    - If we want to do this thoroughly, it goes beyond common sense: we need some help
      - FMEA



# DfX

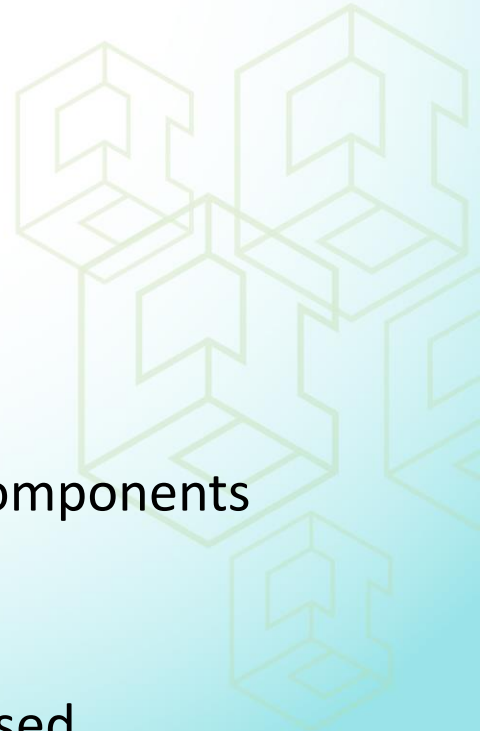
- Example
- Company that produces facades for large buildings
  - Manufacturing / constructors / builders complaining on “lousy design”, complex, incomplete and defective drawings
  - Designers complaining on carelessness, not working to drawing from manufacturing / constructors / builders
  - Project profitability hugely varying
  - Lead times not kept
  - Quality issues





# DfX

- Design offices in 7 locations
  - 43 designers working in isolation
  - not sharing data, no shared library
- All with a different culture
- Every project seen as bespoke: no standard components
- Duplicated design efforts
- Slow throughput
- Planning more often than not completely missed

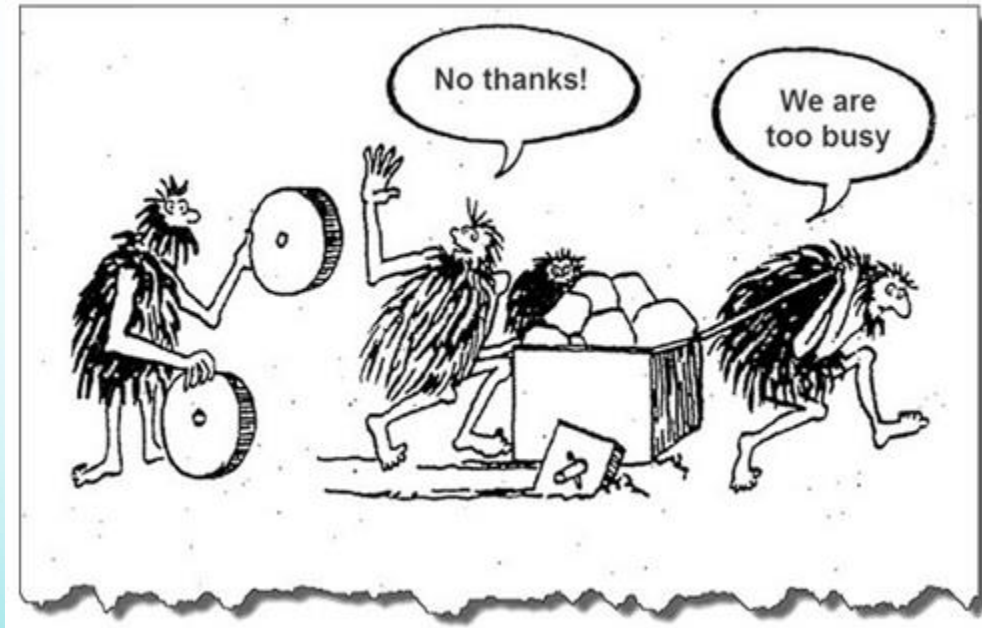


# DfX

- Preliminary results
  - 15M HK\$ savings identified (2% of total turnover)
  - 150 % productivity improvement
    - 57 brackets → 3 brackets
  - too busy to change



# DfX



# DfX

- What does construction Value Chain need?
  - Where to start???
  - What are typical failure modes?
  - What are cost drivers?
  - Standardize what can be standardized
    - At any scale (bolts → buildings)



# DfX

## Value Stream

- Take a helicopter view

Commercial opportunity

Idea

Requirements

Design

Procurement

Manufacturing

Build/assembly

Transfer to owner/user

Asset management



# DfX

- Support functions:
  - Logistics
  - Supplier development
  - QA
  - Sales / VOC
  - IT systems



# DfX

- ## Profitability

  - All entities in the Value Chain need to be profitable
  - Value Stream thinking allows us to balance all activities to maximise the profit of the whole
  - We cannot pour a can of DfX into a project
  - We cannot do it afterwards.
    - It will not yield significant results when we see it as a tool to be used at will.
    - It is a way of thinking and acting throughout the phases of a project.
  - **It is in the design phase where it has greatest impact**



# DfX

- Can anyone learn to think and work this way?
- YES

The past has taught us some lessons though:

- It does not just happen overnight,
- It may not happen at all if we under estimate the effort needed





# DfX

- What will benefits be?
  - Safety 70% fewer site incidents
  - Speed 60% programme saving
  - Saving 40% cost reduction \*
  - Quality 70% fewer defects

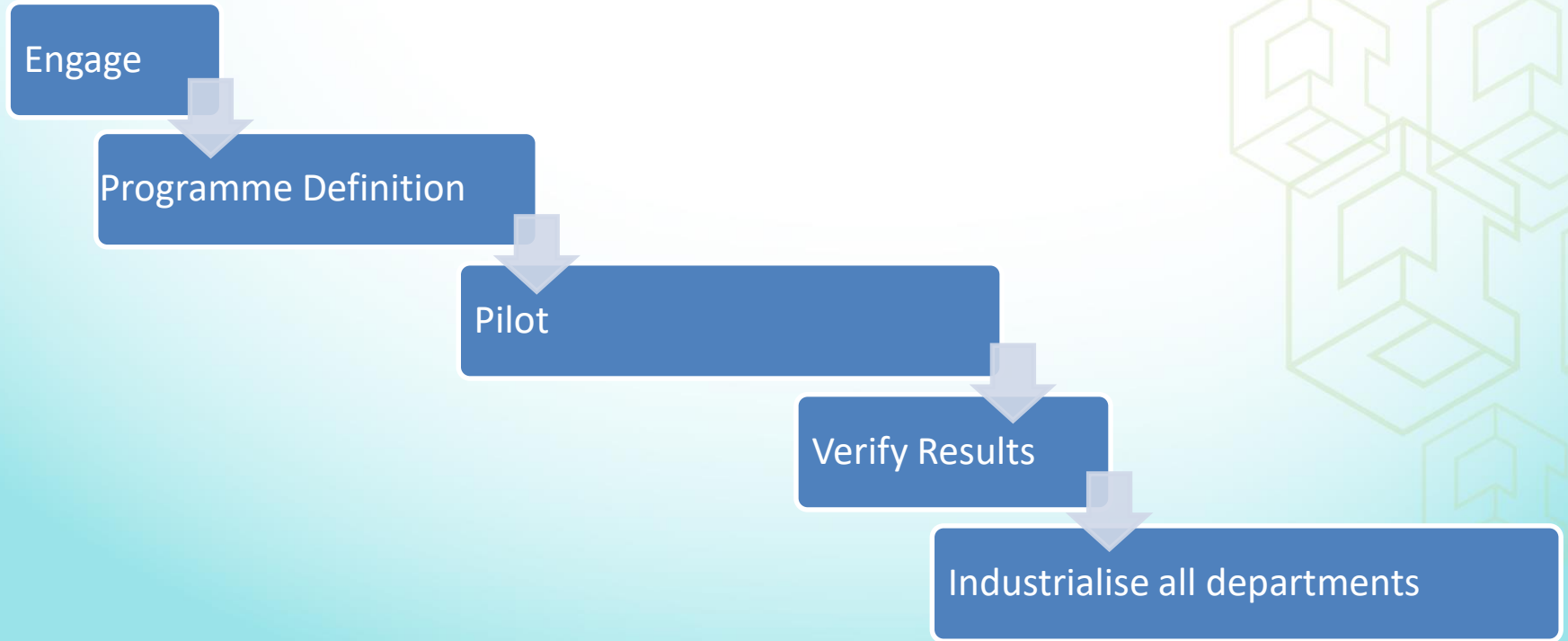


# DfX

- Can we start tomorrow?
- Eh..... yes
- Just like that ?
- NO
- Better get help to shape a program, help to execute and help to build capability in house.



# DfX



# DfX

- Plan for success
  - FMEA
- Collaboration
- Value Chain thinking

- Q&A

