

# Field data - the black hole in bringing planning and construction execution together

Dr. Lucas J Winter

Managing Director, Kontakt GmbH, Austria



A company of  
**umdasch**group  
ventures







# Does the number of variations define complex vs. complicated?



**306.000.000**  
The world's largest ant population



**100.000.000.000.000.000.000**  
The set of variations of a BMW

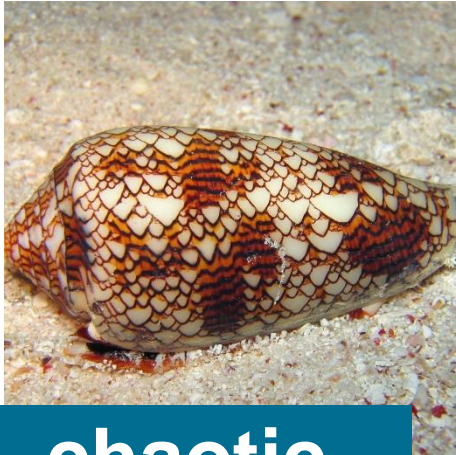
# Cynefin framework of systems



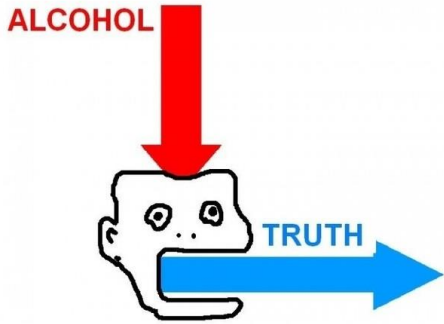
**complex**



**complicated**



**chaotic**



**obvious**

File Architecture Structure Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Modify

Modify Select

Build: Wall, Door, Window, Component, Column, Roof, Ceiling, Floor, Curtain System, Curtain Grid, Mullion

Circulation: Railing, Ramp, Stair

Model: Model Text, Model Line, Model Group

Room & Area: Room, Room Separator, Tag Room, Area, Area Boundary, Tag Area

Opening: Wall, Vertical, Dormer, Shaft

Datum: Level, Grid

Work Plane: Show, Ref Plane, Set, Viewer

Properties

Floor Plan  
Floor Plan - SIM

Floor Plan: AY Level 0\_DPR Edit Type

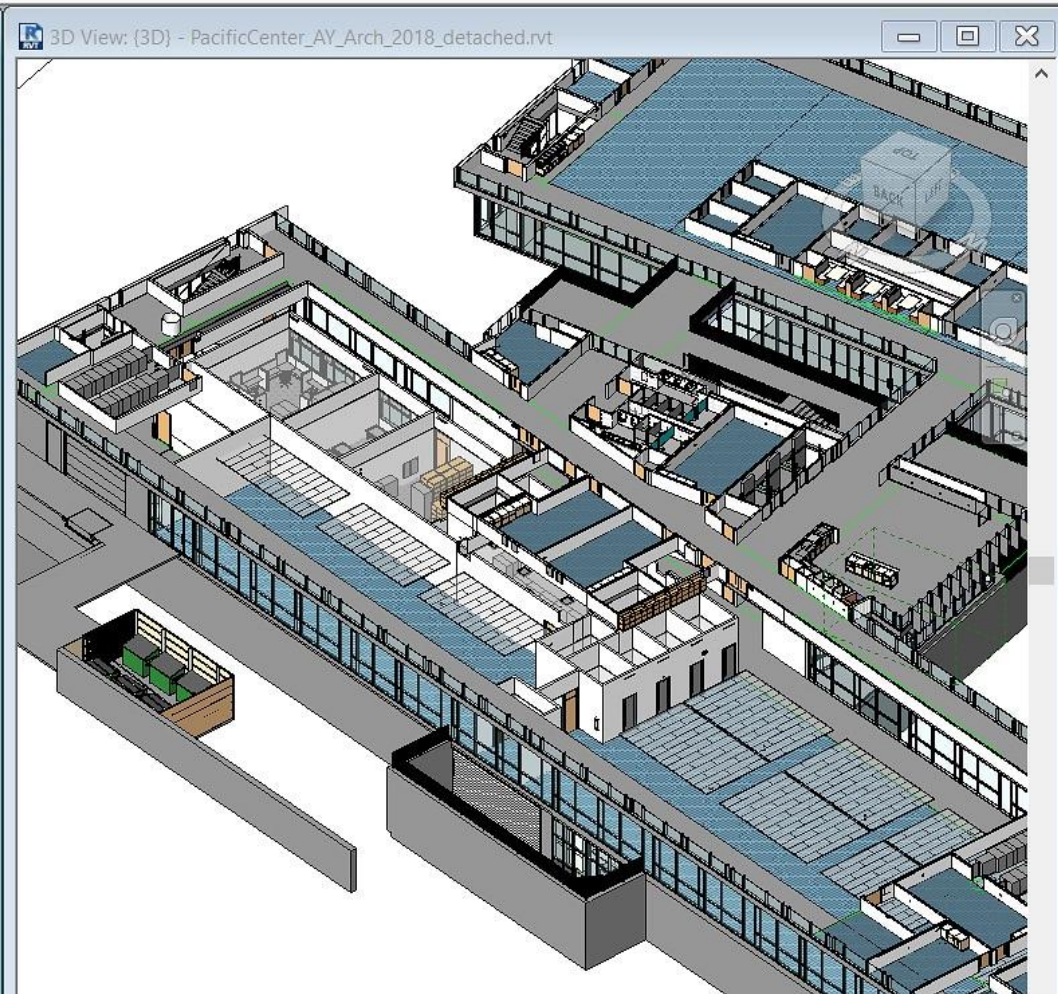
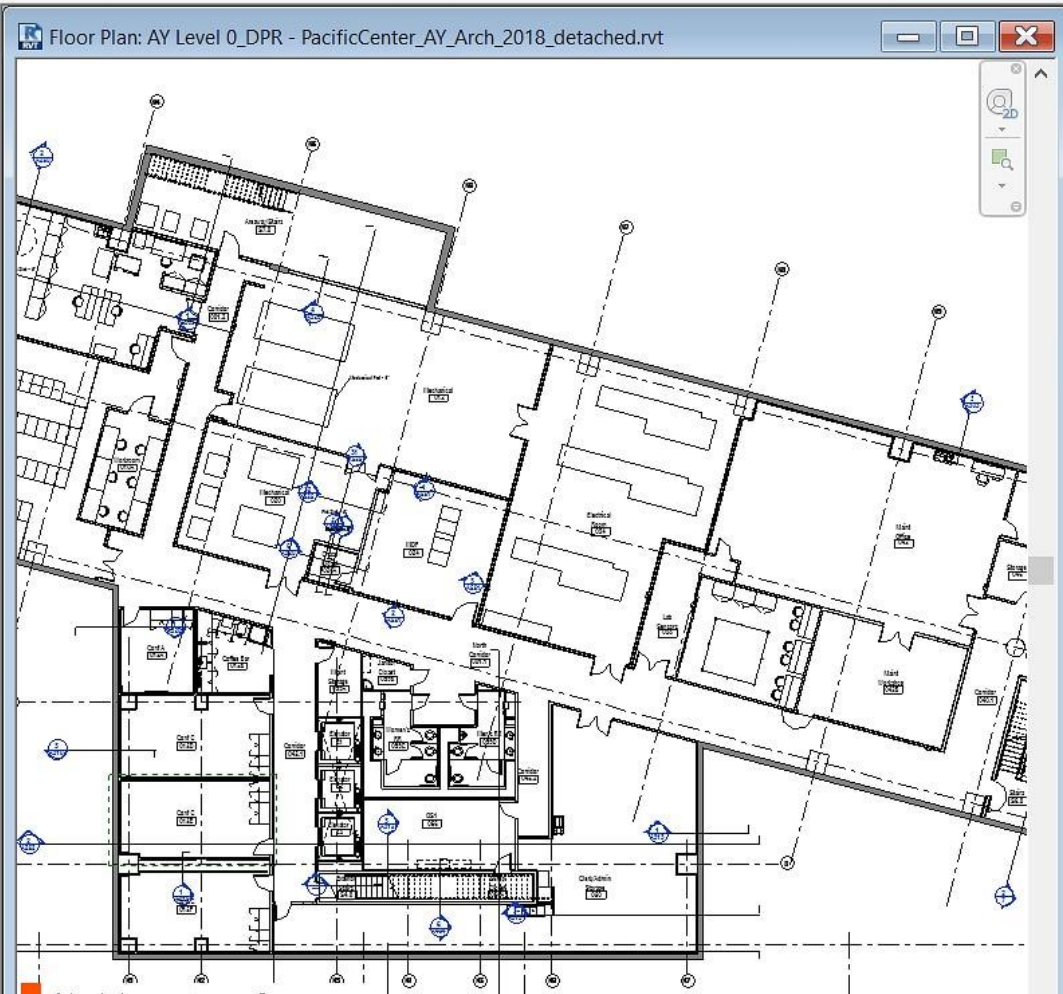
Graphics

View Scale	1/8" = 1'-0"
Scale Value 1:	96
Display Model	Normal
Detail Level	Medium
Parts Visibility	Show Original
Visibility/Graphics...	Edit...
Graphic Display O...	Edit...
Orientation	Project North
Wall Join Display	Clean all wall joins

Properties help Apply

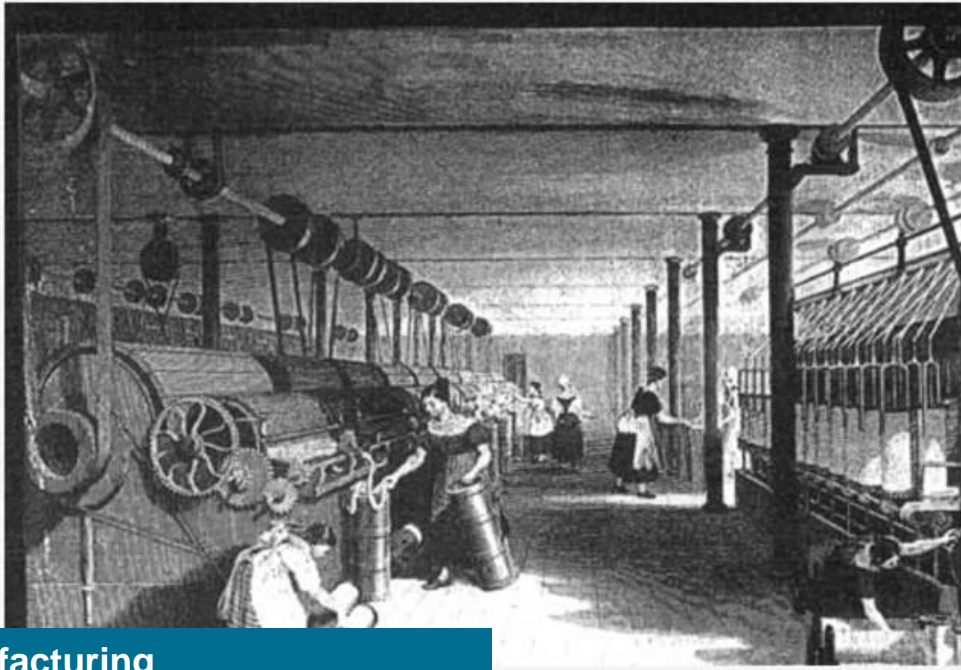
Project Browser - PacificCenter\_AY\_Arch\_2018...

- Drafting View: TYPICAL PI
- Drafting View: TYPICAL T
- Drafting View: TYPICAL T
- Legend: Install Standards
- A010 - DOOR TYPES, FRAMES &
- Drafting View: Door Sche
- Drafting View: Door Sche
- Drafting View: Frame Pro
- Drafting View: Frame Typ
- Drafting View: Typ. Glass
- Drafting View: Typ. Wood
- Elevation: Door Types
- Legend: Door Type\_S





# Variation follows the process or vice versa?

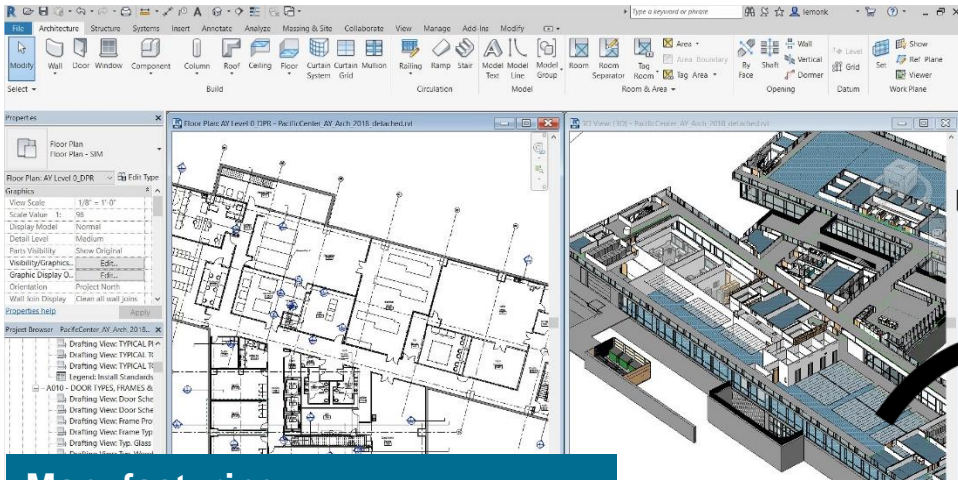


**Manufacturing**  
Variations follow the process



**Construction**  
Process follows the variations

# Chinese wall between planning and execution

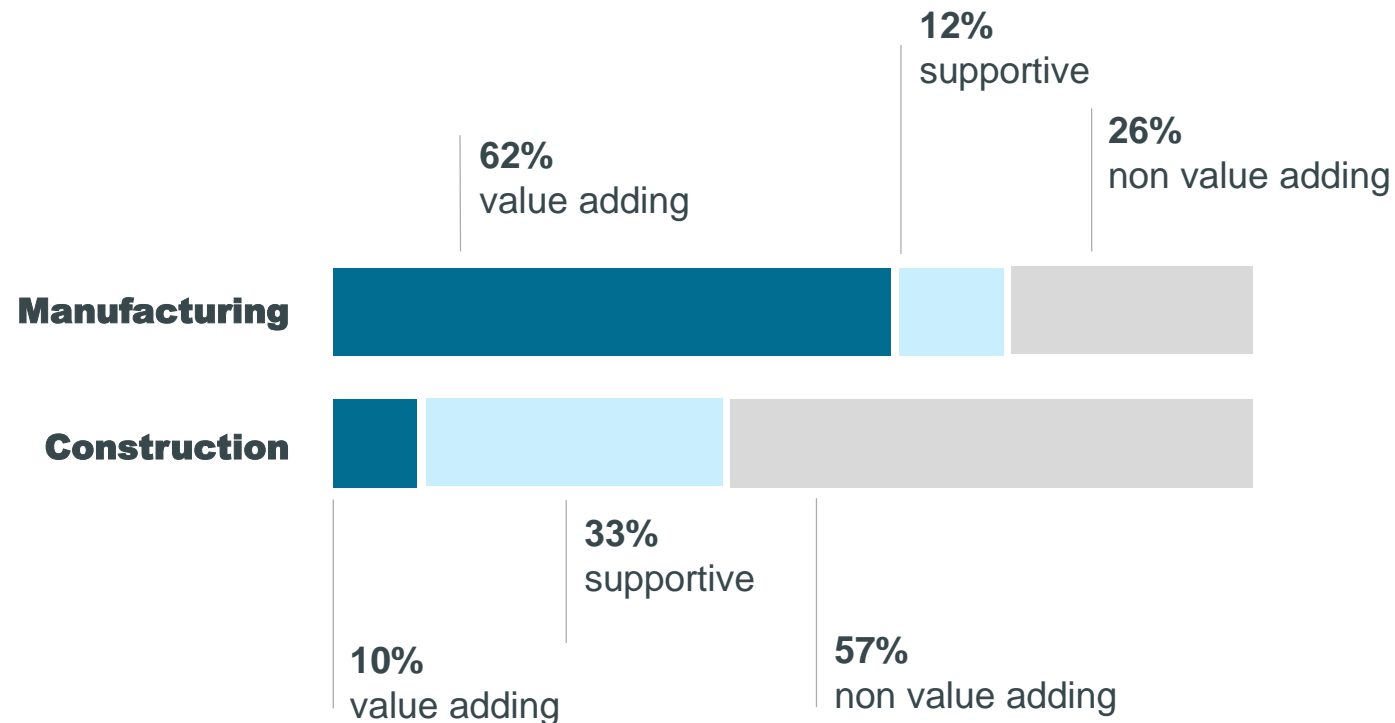


**Manufacturing**  
Variations follow the process



**Construction**  
Process follows the variations

# Productivity potential in construction



Source: Fraunhofer Institute, McKinsey - Reinventing Construction (2017)



**57%**

Of construction time is spent with non value adding activities

## Productivity growth p.a. throughout last 20 years



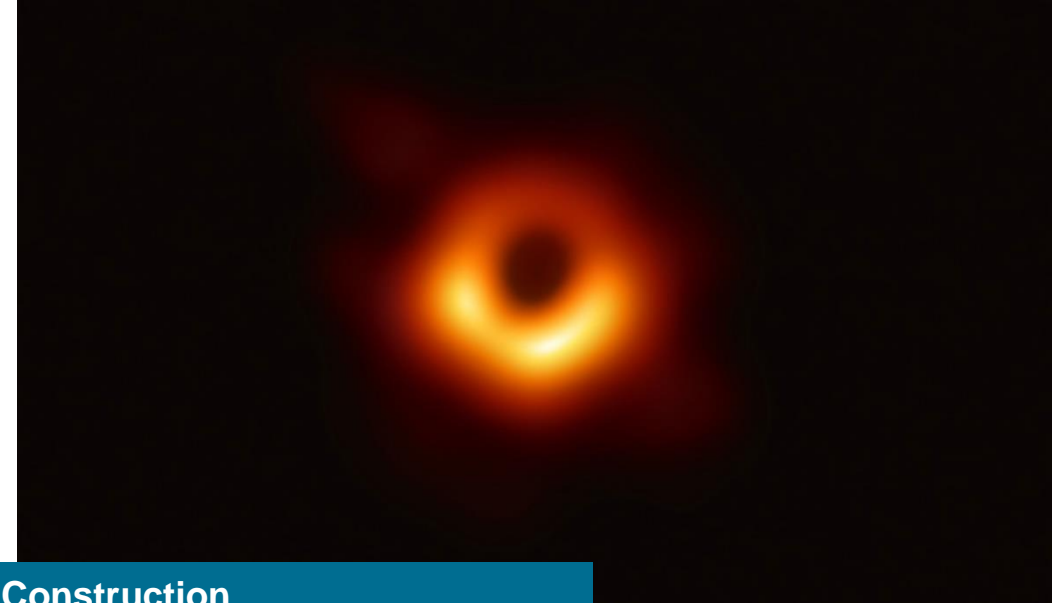
**1,4 trillion €**

Global potential in more production construction per year

# Field data from IoT for plan vs. as-is improvements



**Manufacturing**  
Plan, measure & improve cycle



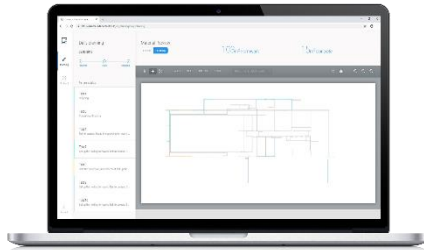
**Construction**

# Continuous improvement

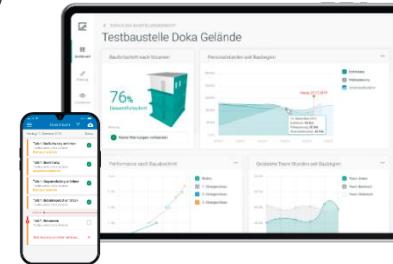


# PLAN | MEASURE | IMPROVE

## 1. digital takt planning



## 2. execute & measure



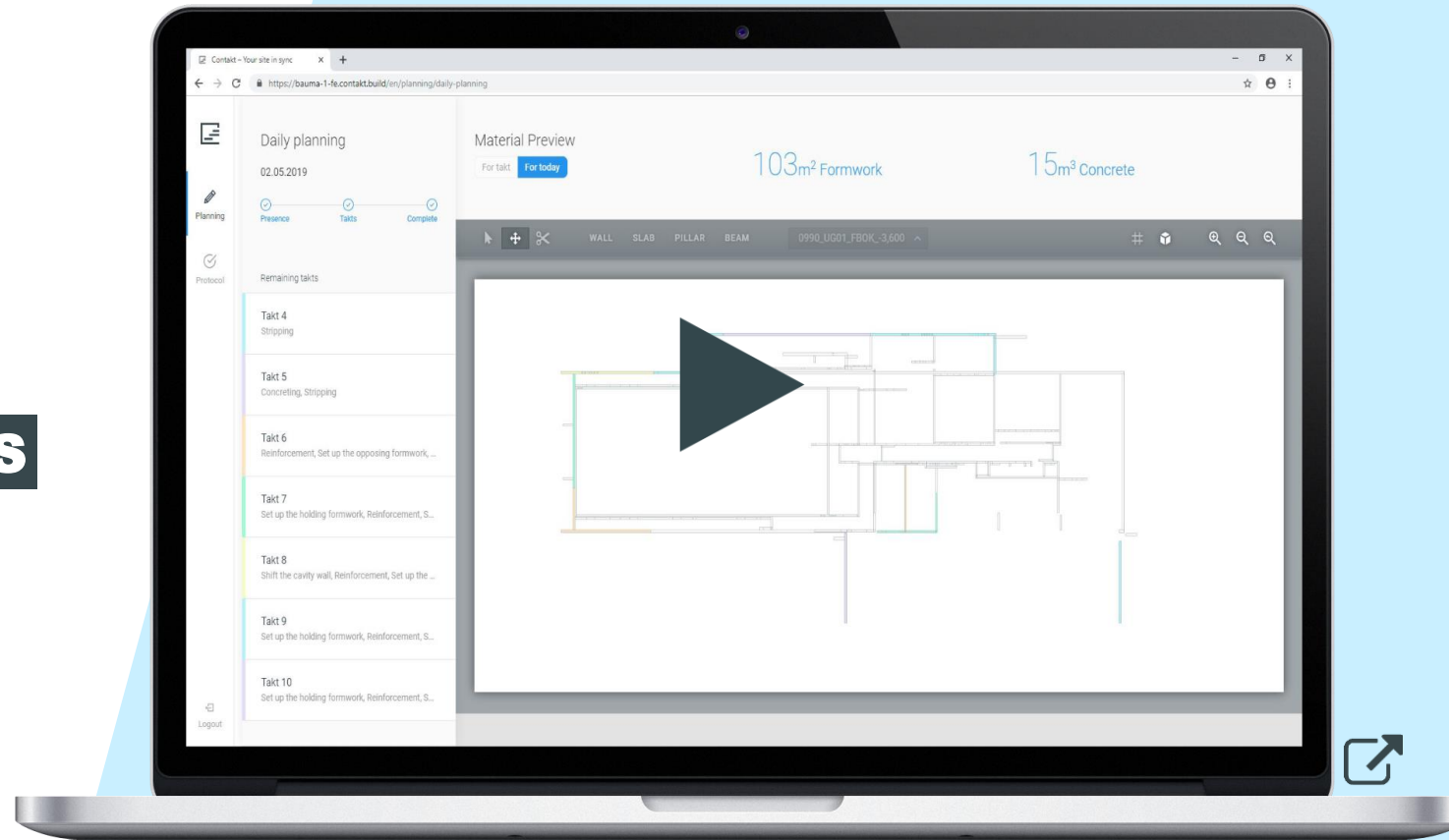
## 3. analyze & improve



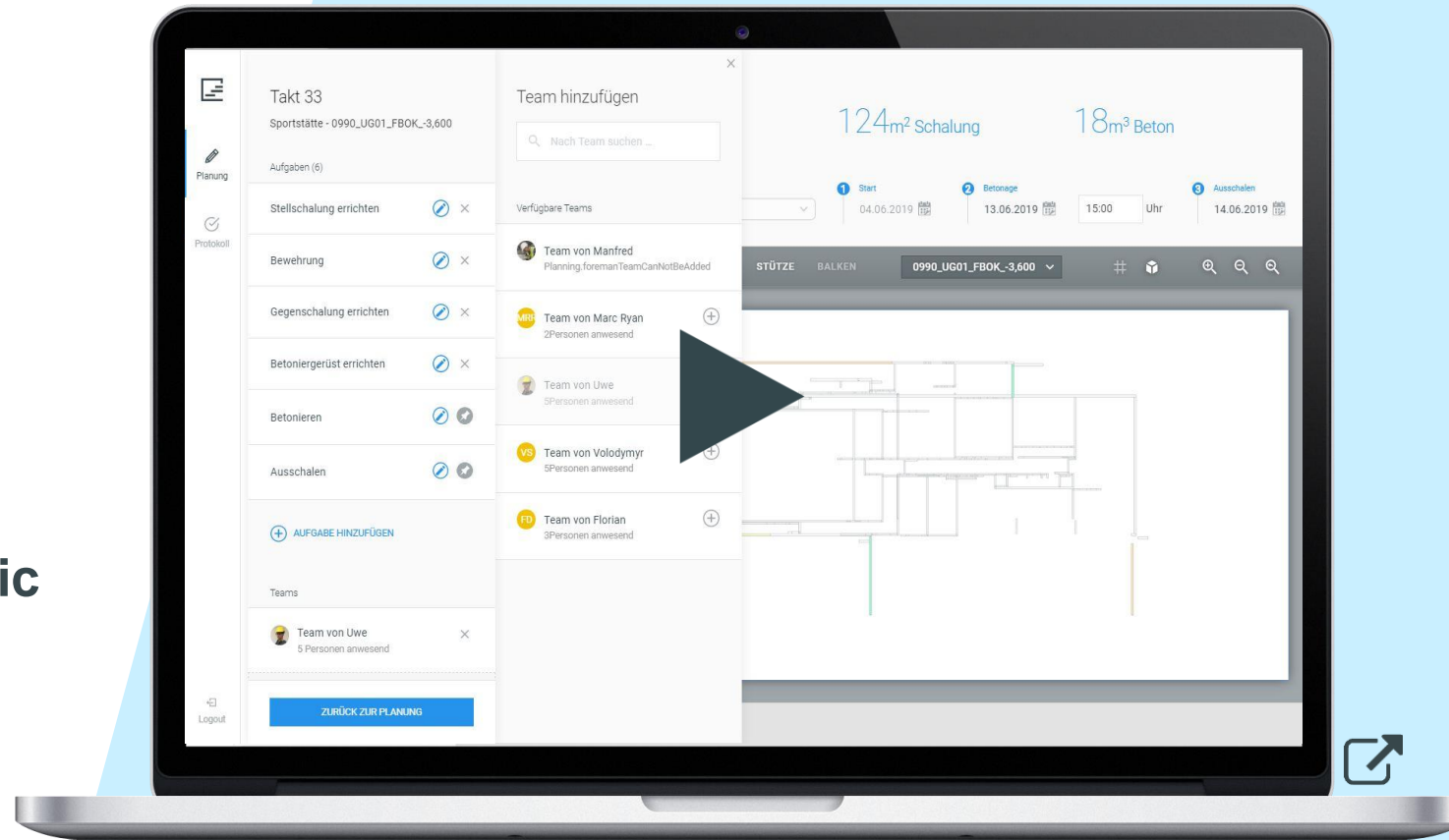
# digital takt planning

1

Simple takt scheduling for a daily & weekly schedule according to **LEAN CONSTRUCTION METHODS** in a user friendly environment



Perfectly coordinated  
**DAILY PLAN**  
with a clear „who is doing what with  
which team and which material?“ logic



# EXECUTE & MEASURE

Precisely coordinated tasks and

**LIVE PERFORMANCE-MONITORING**

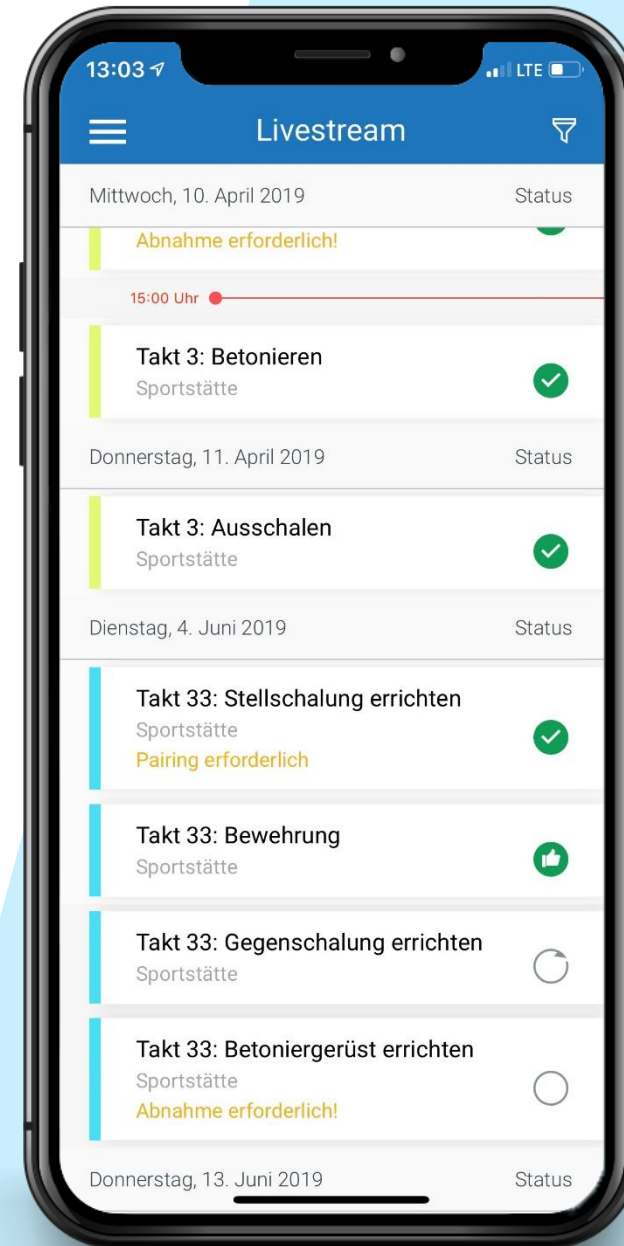
because of IoT and manual field data

2



Efficient team communication with  
synchronized

## TASK ASSIGNMENT AND COORDINATION



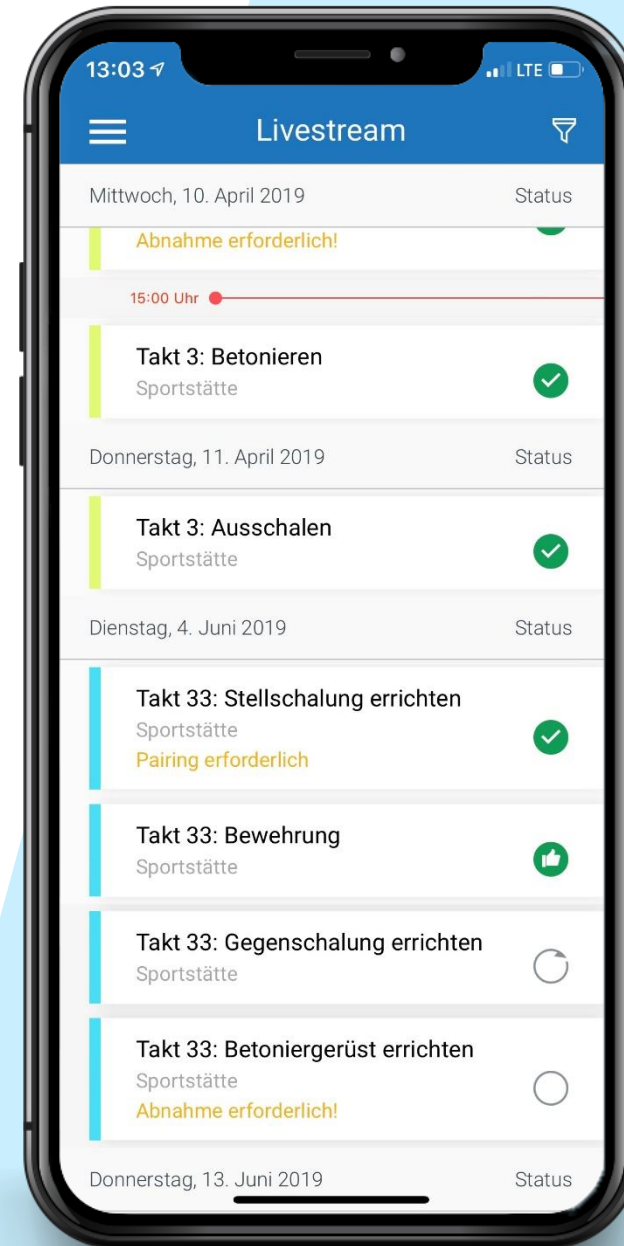
**Defined roles and responsibilities**

**Transparent task assignment**  
(multilanguage)

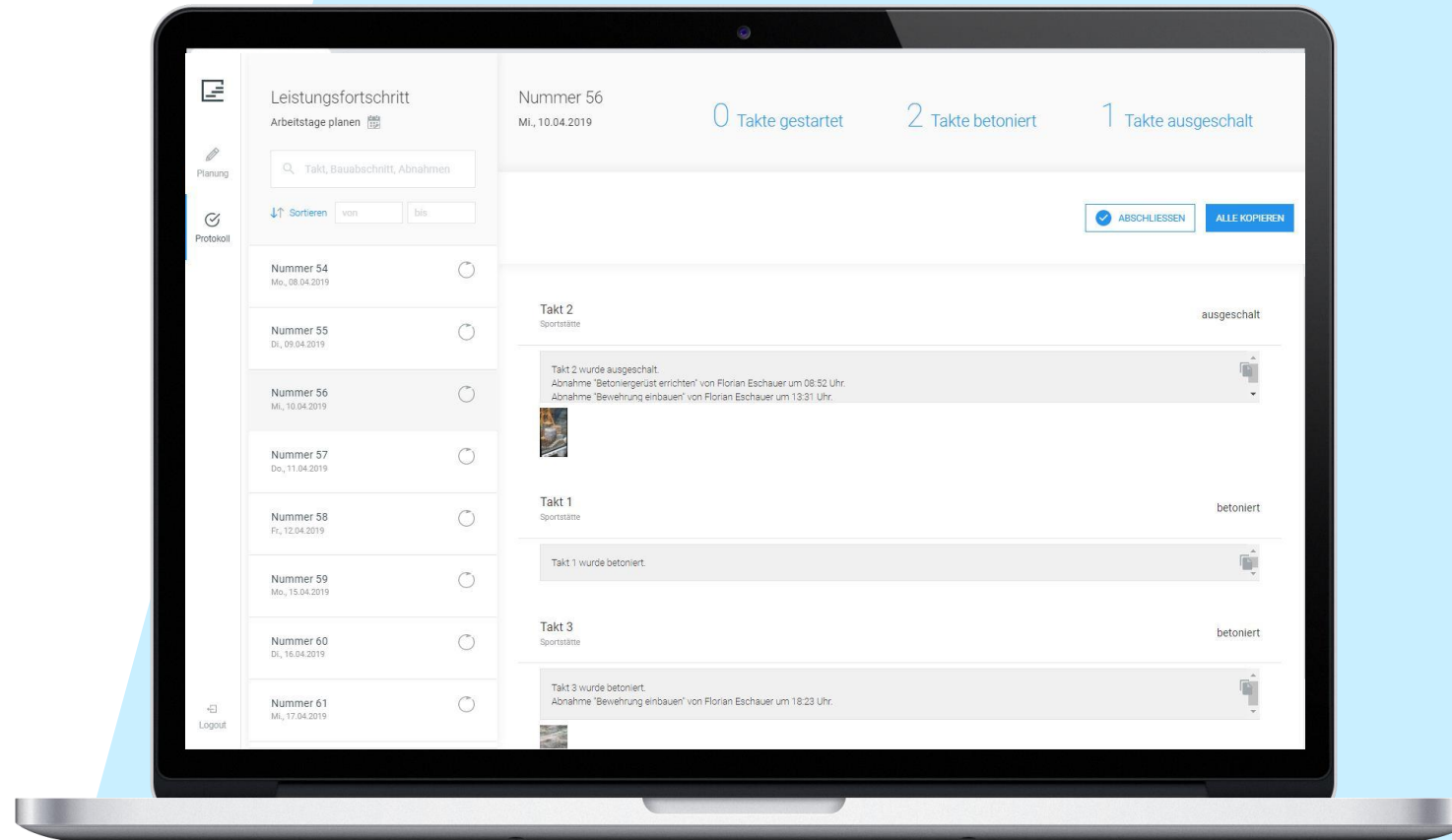
**Coordination of teams**  
(who is doing what until when)

**Picture & performance documentation**

**Improved team communication**



Automatic journaling of fulfilled and planned tasks for a real real-time  
**FULFILLMENT TRACKING**  
on site and remote



# ANALYZE & IMPROVE

Construction progress and

**PRODUCTIVITY** of

all projects at a glance

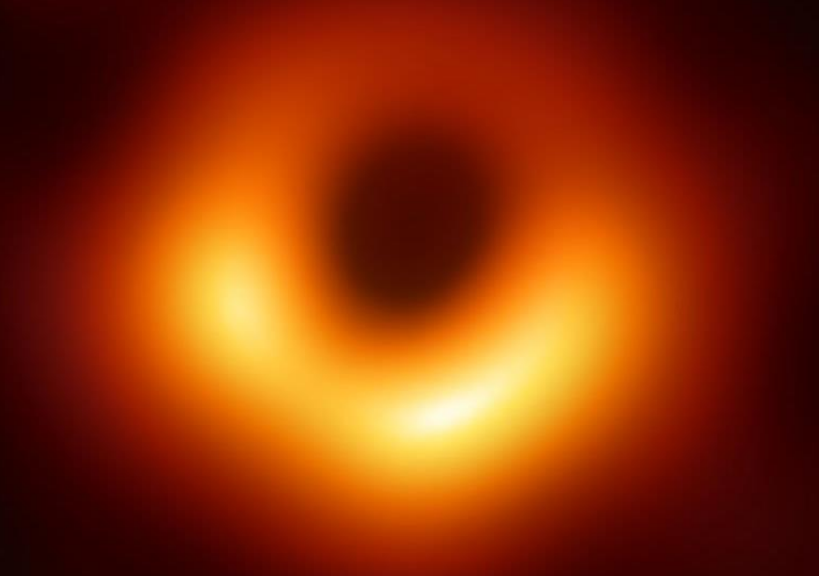
**Progress & Performance** of all projects at a glance

**Optimized production workloads & processes**

**Higher precision in tender calculation and work preparation**  
with own and real-life measured field data

**Tracking of milestones**  
Deviation alerts







2

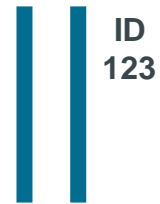
# CONTACT SENSOR



Position  
horizontal



Movement  
gyroscope



Position  
vertical



Concrete  
temperature



maturity  
tracking



Outside  
temperature



Long Range Wide  
Area Network



~ 1.3 years



# End to End planning with field data for higher productivity and beyond



**Linking**  
the projects



**Import**  
BIM360 project



**Check**  
model version



**Update**  
from BIM360



**Export**  
BIM360 as built

# Autodesk & Contakt tomorrow

## what about construction execution simulation?

