

Make Room for Innovation

VONOVIA

Capital Markets Day 2016 / Essen / June 6th 2016

Planning affordable housing

Heinz Scheve / Managing Director Vonovia Technical Services (DTGS)

As people move back into the cities, they want comfortable, affordable apartments within an established community.

Quality

- Structural solution
- Fixtures and fittings
- Living environment

Asset yield/ Value appreciation

- District
- Cost
- Speed



Marketability

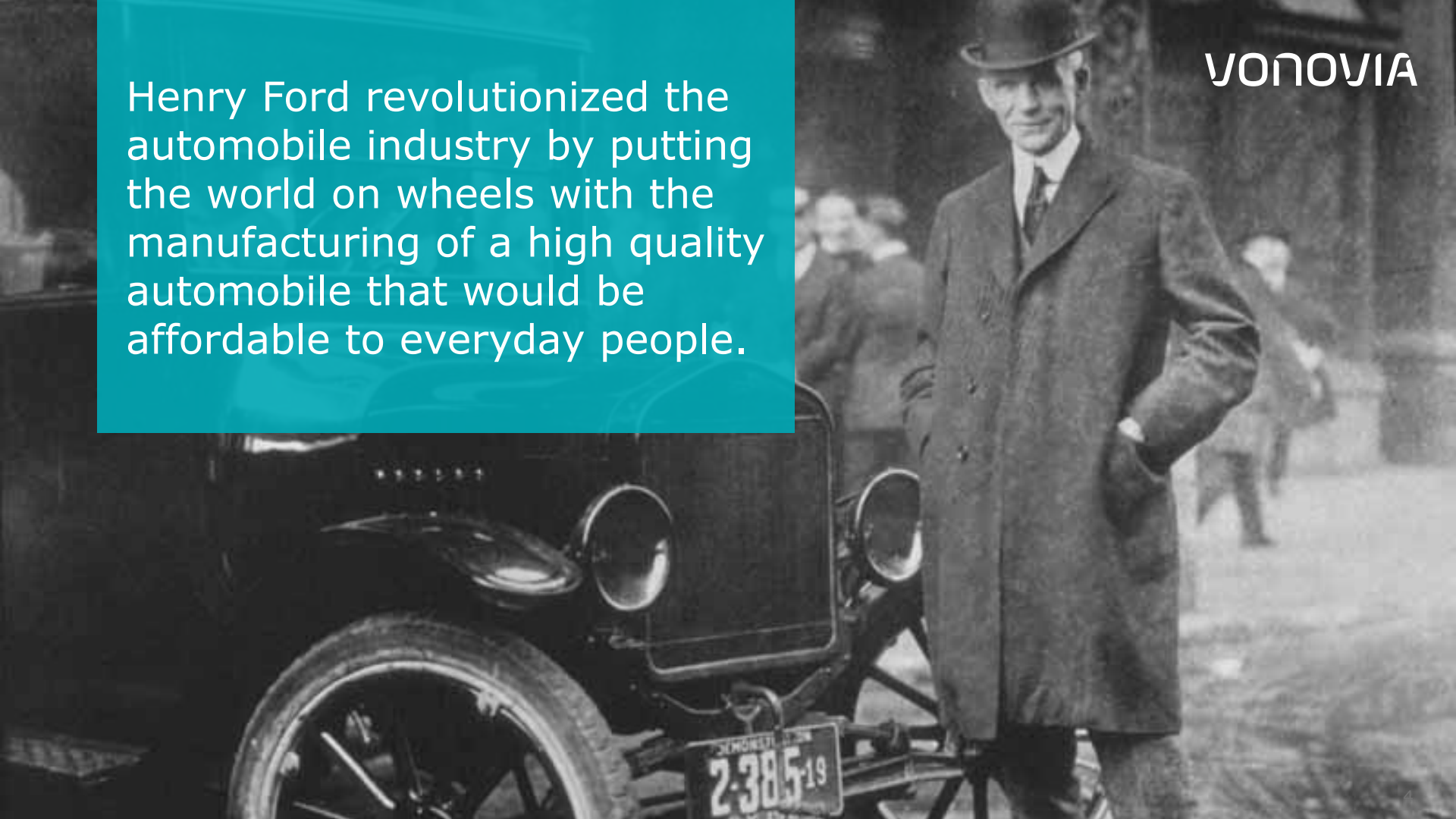
- Room concepts
- Absolute rent
- Rent per square meter
- Existing clientele

Social acceptance

- Politics
- Existing tenants
- Authorities

Henry Ford revolutionized the automobile industry by putting the world on wheels with the manufacturing of a high quality automobile that would be affordable to everyday people.

VONOVIA



Vonovia is revolutionizing
the building planning
process by ...

Potential
identification

Planning of
modular and serial
buildings

Realization

Step 1

Determining building potential

A highly flexible building potential identification tool

VOIONOVIA

Baulücken-Ermittlung (V2.0)

Buttons: Laden, Ausführen, Löschen, Säubern, Laden, Speichern, Schließen

Beschreibung | Analyseparam. | Basisparam. | Gebäudeausschluss

Baulückenanalyse:

Bezeichnung*: Essen_gesamt_10 m Mindestabstand

Kategorie:

Beschreibung: X Y Z

Ausdehnung:

Gesamtbestand

Fläche

263558867.05025032

Baulücken-Ermittlung (V2.0)

Buttons: Laden, Ausführen, Löschen, Säubern, Laden, Speichern, Schließen

Beschreibung | **Analyseparam.** | Basisparam. | Gebäudeausschluss

Größen/Maße:

Mindestflächengröße (m²): 300

Mindestbreite Baufenster (m): 20

Max. Überbauungsgrad (%): 50

Max. Geschossflächenzahl: 1,5

Flächenausschluss/-berücksichtigung:

Ausschluss von P+E-Flächen: Ja Nein

Ausschluss sonstiger unbebauter Flächen: Ja Nein

Berücksichtigung von Analyse-Ausschlussflächen: Ja Nein

Berücksichtigung von Baurechtflächen: Ja Nein

Baulücken-Ermittlung (V2.0)

Buttons: Laden, Ausführen, Löschen, Säubern, Laden, Speichern, Schließen

Beschreibung | Analyseparam. | **Basisparam.** | Gebäudeausschluss

Berechnungsvorgaben:

Gebäudeabstand/Höhe (%): 40

Mindest-Gebäudeabstand (m): 10

durchschn. Geschosshöhe (m): 3,5

Breite von Straßen (m): 15

Breite von Zufahrtsstraßen (m): 10

Ermittlungsraster (m): 3

Baulücken-Ermittlung (V2.0)

Buttons: Laden, Ausführen, Löschen, Säubern, Laden, Speichern, Schließen

Beschreibung | Analyseparam. | Basisparam. | **Gebäudeausschluss**

alle auswählen

- Abfall (Lagergebäude)
- Doppelgarage
- Einzelgarage
- Fahrzeughalle
- Garage
- Gartenhaus
- Gewächshaus
- Gewächshaus (allgemein)
- Gewächshaus, Treibhaus
- Lagerhalle
- Lagerschuppen
- Lagerung (allgemein)
- Lagerung (soweit nicht OS 1741-1747)
- Parkdeck
- Parken (soweit nicht OS 2361-2367)
- Parkhaus
- Sammelgarage

High Performance

Identify possible building spaces or building modification possibilities within minutes

High Accuracy

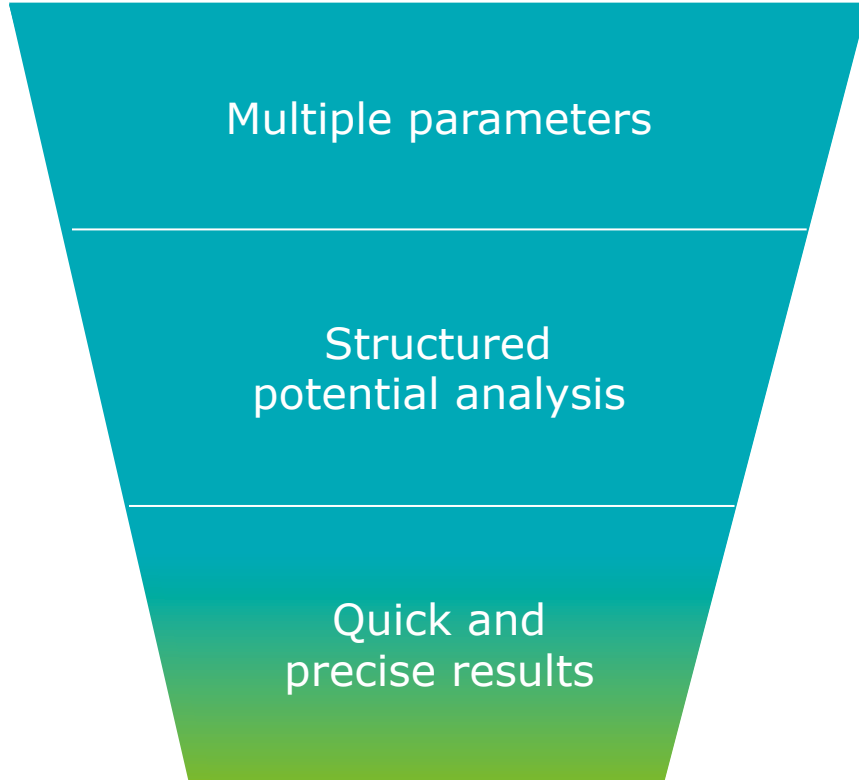
Identify valuable development areas and building gaps

Acquisitions

Quickly determine value of new vacant lots



The automatic identification of possible building spaces is currently unique in the **housing industry**



An example: Gap Analysis Berlin

Currently known potential	13 vacant building lots
New potential detected by building gap tool	67 additional building lots

+515%

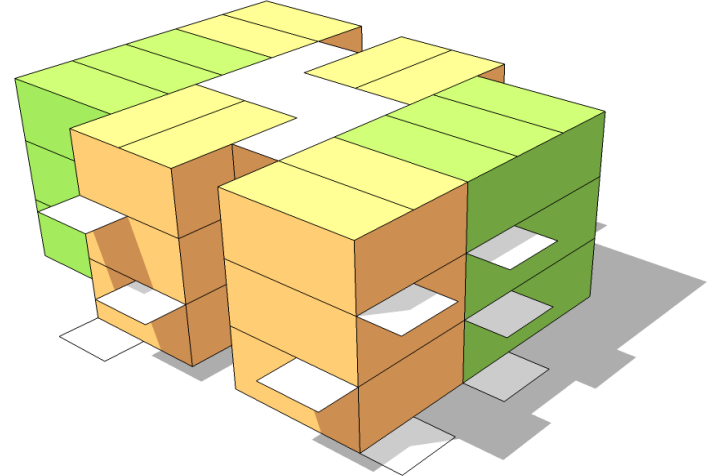
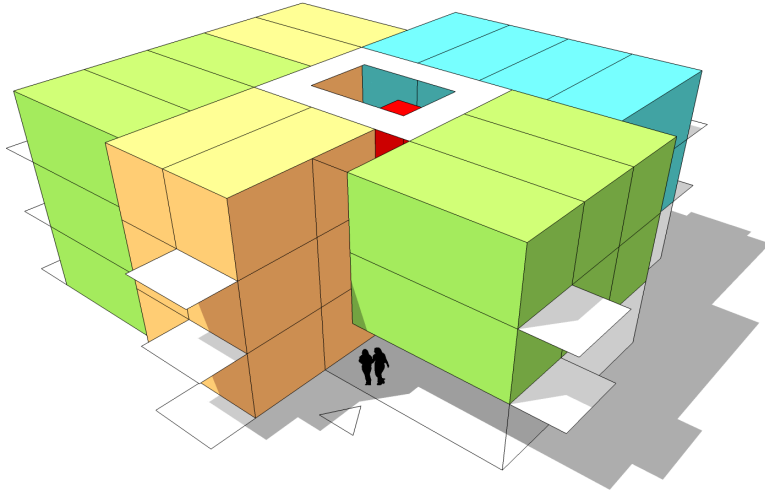
Steps 2 & 3

Planning and realization
of modular and serial buildings

Modular, serial building concept

- Lego principle building approach
- Modular development of ground and floor plans according to the smallest common

- Individual mix of living spaces through multiple ways of assembling the modules



Facade



Ground floor



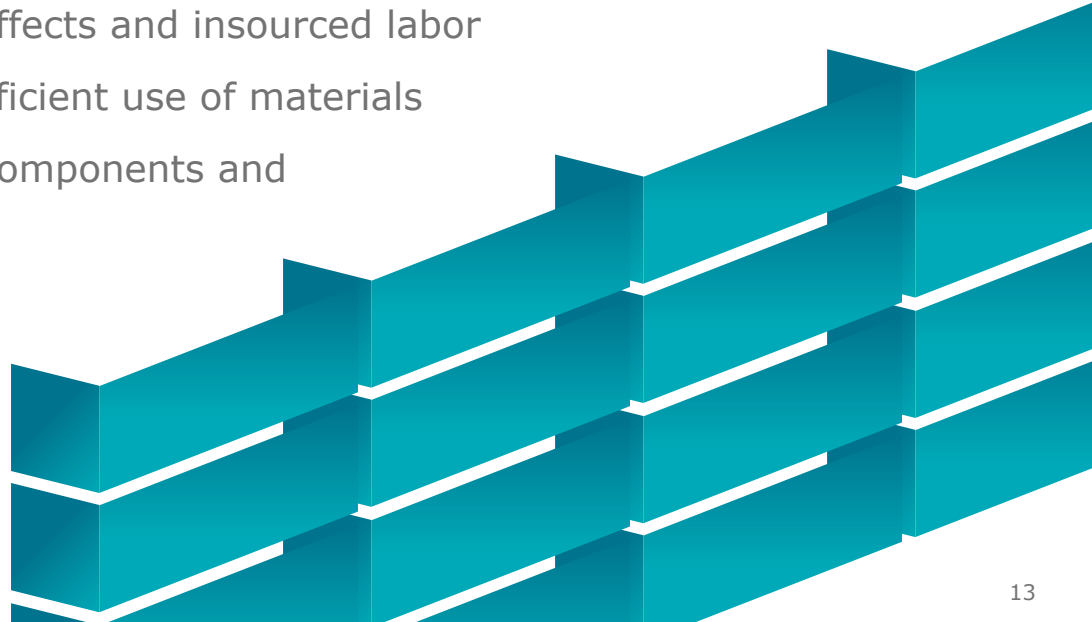
List

1	Etag	Funktion	Material	Stärke	Fläche	Volumen
2	0	FB	FL	3	35,4	0,39
3	0	FB	PA	3	238,47	2,36
4	0	FB	ZE	10	74,7	7,47
5	0	FB	ZE	10	253,97	25,4
6	0	SO	STB	20	377,08	385,08
7	0	Terrasse	STB	18	7,15	1,29
8	0	Terrasse	STB	18	7,15	1,29
9	0	Terrasse	STB	18	7,15	1,29
10	1	Balkon	HO	28	7,15	2
11	1	Balkon	HO	28	7,15	2
12	1	Balkon	HO	28	7,15	2
13	1	Balkon	HO	28	7,15	2
14	1	Balkon	HO	28	7,15	2
15	1	DC	HO	28	365,98	31,04
16	1	DC	STB	28	36,18	6,85
17	1	FB	FL	3	29	0,25
18	1	FB	FL	3	29	0,25
19	1	FB	PA	3	253,14	2,53
20	1	FB	PA	3	253,14	2,53
21	1	FB	ZE	10	278,14	27,81
22	1	FB	ZE	10	36,96	3,69
23	1	FB	ZE	10	278,14	27,81
24	2	Balkon	HO	28	7,15	2
25	2	Balkon	HO	28	7,15	2
26	2	Balkon	HO	28	7,15	2

- Efficient process and production
- Data exchange with planning specialists
- Optimal ground plan through industrialized design and construction
- Efficient maintenance and repairs of buildings as a result of information from databank
- Automated generation of material lists and material costs

The big picture

- Do it once right. Repeat!
- Highly adaptable to difficult local and structural demands
- Greater cost control due to concept development, individual solutions and prefabrications
- Cost depression due to high volume effects and insourced labor
- Quicker building process with more efficient use of materials
- Easier maintenance due to standard components and high level of customer data
- Response to shortage of skilled labor



1

Conventional

Building cost: € 2,500 per m²



Value break even
at € 11.50 rent/m²

2

Vonovia serial approach

Building cost: € 1,800 per m² (estimate)



~35% value uplift on total investment (incl. property)
at € 11.50 rent/m²

Resulting in
value uplift:

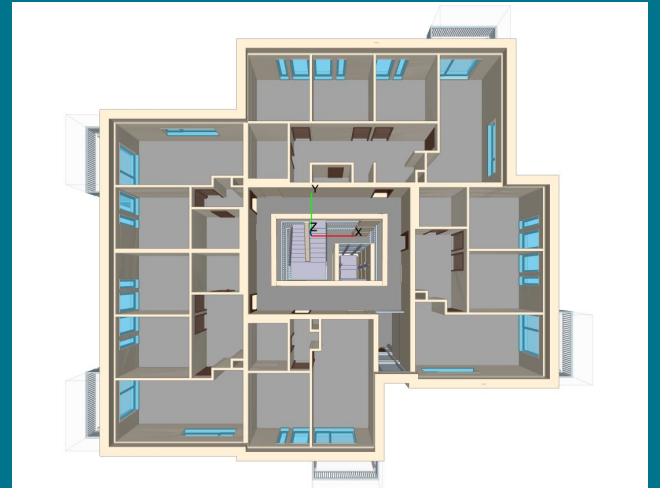
1 apartment:
+ €50 k

1,000 apartments:
+ €50 m

10,000 apartments:
+ €500 m



Multi-unit Dwelling with 3 floors, 5 apartments each
ca. 21x22 m
ca. 766 m² living space



Planning affordable housing

New constructions and building modifications

Disclaimer

This presentation has been specifically prepared by Vonovia SE and/or its affiliates (together, "Vonovia") for internal use. Consequently, it may not be sufficient or appropriate for the purpose for which a third party might use it.

This presentation has been provided for information purposes only and is being circulated on a confidential basis. This presentation shall be used only in accordance with applicable law, e.g. regarding national and international insider dealing rules, and must not be distributed, published or reproduced, in whole or in part, nor may its contents be disclosed by the recipient to any other person. Receipt of this presentation constitutes an express agreement to be bound by such confidentiality and the other terms set out herein.

This presentation includes statements, estimates, opinions and projections with respect to anticipated future performance of Vonovia ("forward-looking statements") which reflect various assumptions concerning anticipated results taken from DA's current business plan or from public sources which have not been independently verified or assessed by Vonovia and which may or may not prove to be correct. Any forward-looking statements reflect current expectations based on the current business plan and various other assumptions and involve significant risks and uncertainties and should not be read as guarantees of future performance or results and will not necessarily be accurate indications of whether or not such results will be achieved. Any forward-looking statements only speak as at the date the presentation is provided to the recipient. It is up to the recipient of this presentation to make its own assessment of the validity of any forward-looking statements and assumptions and no liability is accepted by Vonovia in respect of the achievement of such forward-looking statements and assumptions.

Vonovia accepts no liability whatsoever to the extent permitted by applicable law for any direct, indirect or consequential loss or penalty arising from any use of this presentation, its contents or preparation or otherwise in connection with it.

No representation or warranty (whether express or implied) is given in respect of any information in this presentation or that this presentation is suitable for the recipient's purposes. The delivery of this presentation does not imply that the information herein is correct as at any time subsequent to the date hereof.

Vonovia has no obligation whatsoever to update or revise any of the information, forward-looking statements or the conclusions contained herein or to reflect new events or circumstances or to correct any inaccuracies which may become apparent subsequent to the date hereof.

Tables and diagrams may include rounding effects.