BIG DATA ANALYTICS
TOWARDS A RETROFITTING PLAN FOR THE **CITY OF STOCKHOLM**

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KIC InnoEnergy

FROM
BIG DATA

13 GB OF RAW DATA
15 000 BUILDING COMPLEXES
HOURLY DISTRICT HEATING CONSUMPTION FOR **2012**
130 MILLION DATA ENTRIES
48 KM^2 OF BUILDINGS BUILDING **PURPOSE**
BUILDING **LOCATIONS**

TO ENERGY EFFICIENCY

Compare buildings' **energy performance** (kWh/m^2 per year)
Propose a set of **retrofitting measures** to save energy
Calculate **potential energy savings** for every building
Compare **saved running costs** to **retrofitting cost**
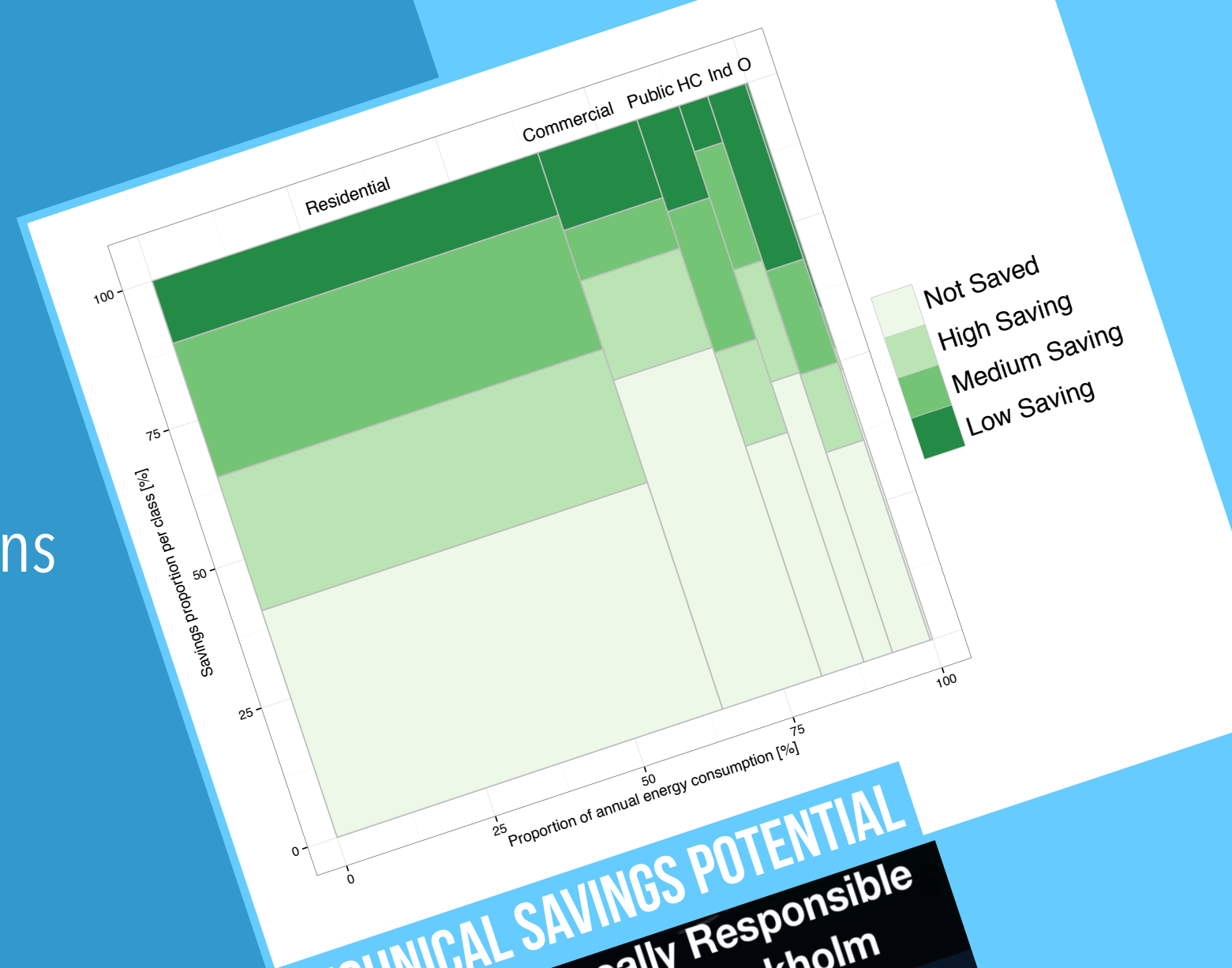
RESULTS

Technical savings potential

More than 50% of energy can be saved
All buildings complying to Swedish Building regulations

Retrofitting plan

Cost & benefits taken into account
Only 664 buildings need to be retrofitted
Investment returned within 20 years *(4% intrest)*
Investment cost 2.8 billion kr
4.6% energy saved per year

Energy map

Shows location of profitable savings
Allows local government to prioritize
improving energy efficiency in certain areas

And *here* they are

TECHNICAL SAVINGS POTENTIAL

ENERGY MAP OF STOCKHOLM

Resulting Fiscally Responsible
Retrofitting Plan Stockholm

STOCKHOLM - PROFITABLE ENERGY SAVINGS

315 GWH   19 520 GWH

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CONTRIBUTION & VALUE

From **big data** to a **realistic energy savings plan,** keeping cost & benefits in mind

Assist city councils to target investments at cost-efficient retrofits with the biggest energy impact

Suggest adaptations for the Stockholm *Climate and Energy Action Plan*

IEA has identified **end-use efficiency** as the most important step towards **CO_2 emission abatement**

Triple helix interdisciplinary collaboration between *industry, academia (KTH IE & INDEK)* and *government (Stockholm)*

WON THE EIT-KIC INNOENERGY MSc ENERGY FOR SMART CITIES **2ND MASTER THESIS PRIZE** (INNOVATION PRIZE)

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Stockholm
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Stockholm action plan
for climate and energy
2012–2015
WITH AN OUTLOOK TO 2030