Energy and climate policy for the building sector
Which perspectives have to be taken into account and what are their requirements regarding successful policy implications?

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BFW
Bundesverband Freier Immobilien- und Wohnungsunternehmen

DDIV
Dachverband Deutscher Immobilienverwalter

GdW
Bundesverband deutscher Wohnungs- und Immobilienunternehmen

IVD
Immobilienverband Deutschland - Bundesverband der Immobilienberater, Makler, Verwalter und Sachverständigen

vdp
Verband deutscher Pfandbriefbanken

ZIA
Zentraler Immobilien Ausschuss

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Agenda

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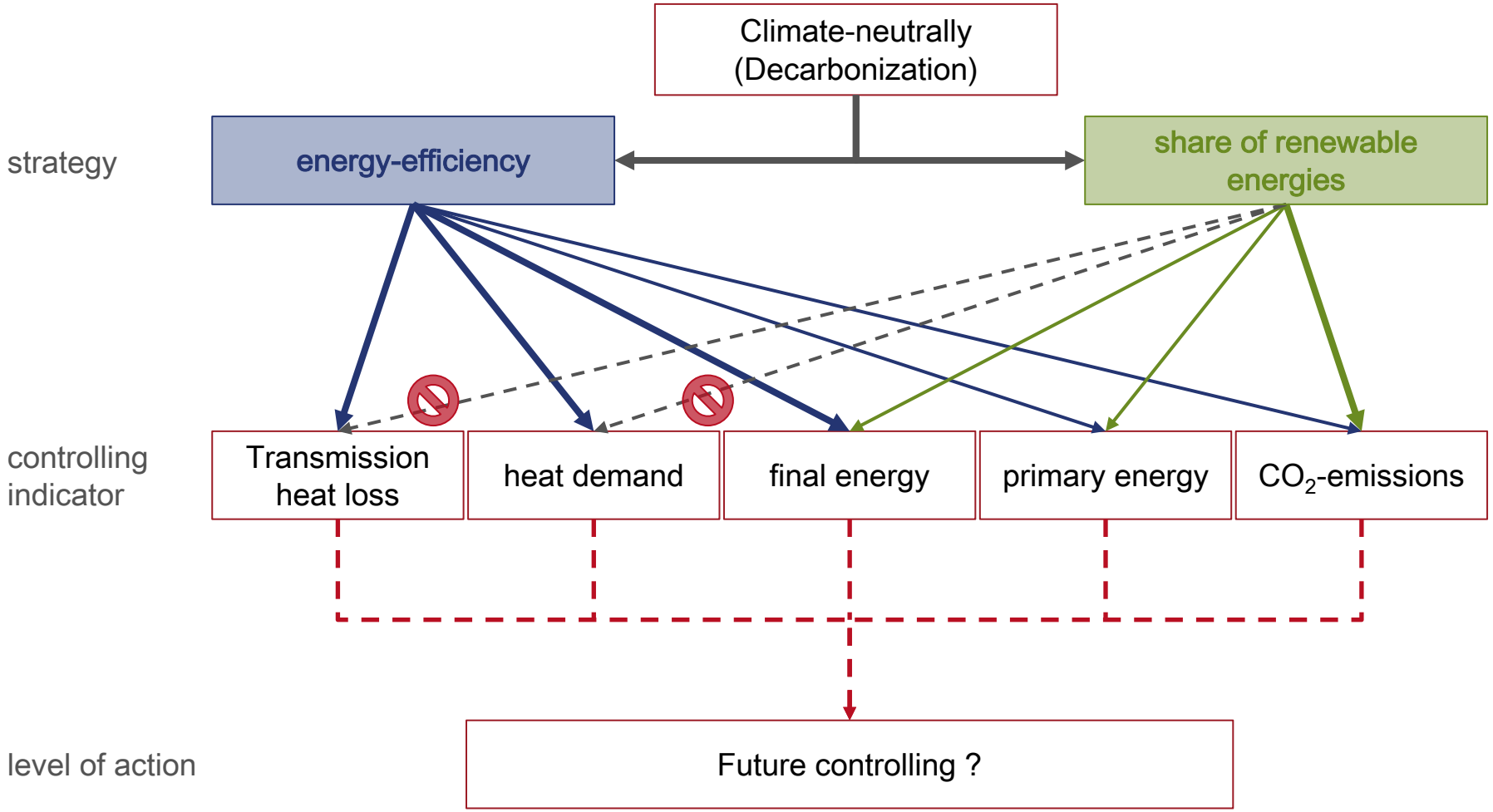
1. Purpose and aim of research
2. Findings
3. Conclusions

Background: control mechanisms in energy and climate policy for the building sector are complex



Aim and research question

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Purpose

Systematic assessment of alternative implementation strategies for the energy sector in the building sector, related control indicators and their legal implementation

Aim

Provide transparency on the strengths and weaknesses of the respective strategies in the control and implementation of the energy demand in the building sector

Research question

Is the current control system still effective in the enforcement of energy and climate policy goals in the building sector, or does it require reform and, if so, in what respect?

Operating principle of the existing controlling

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Targets and control units of EnEV and EEWärmeG

instrument/law		target	Reference value/control unit
Building sector	EnEV	energie efficiency ↗	**Primary Energy demand** Q_P reference to not renewable energies (main requirement); verifiable energy demand (in the energy certification)
		thermal insulation ↗	specific, heat transfer enclosure surface **transmission heat loss** H'_T (other constrains)
	EEWärmeG	share renewable ↗	**Renewable energies fractions** (eg. Compensation measures) of heating demand

Source: refferenced to IHB GmbH/ITG Dresden et al. (2016)

Various parameters in control units define the requirements on-site.

The efficiency alternative actions will be rated from an object level and engineering scientific point of view (from an object level) (DIN 18599 or rather DIN 4108/4701).

Object-related valuation is just one option to measure efficiency of climate/energy policies

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Alternatively valuation principles in energy and climate politics for real estate

Object referenced valuation
(technical approach)

Objective is **efficiency of primary energy** of the technical solutions on a Construction-/district level (DIN 18599 or rather DIN 4108/4701)

Valuation result: technical optimised result in case of primary energy demand (under standard test conditions).

Subject referenced valuation
(perspective of actors on-side)

Objective is **economic benefits** from a real-estate-economical point of view, cost-efficient housing (**Owner**, **User** and producer); Plus from a user point of view: living comfort

Valuation result: economical optimised result on-site

Overall economical/ environmental economical valuation

Objective is **cost-efficient abatement of green house gases** (– in case of a bottleneck in financing the climate protection)

Valuation result: (across sectors): GHG abatement cost possible measures of principles of efficient controlling.

The current controlling system conflicts to other protective goods and objective systems – is not able to reflect the conflicts or take them into account.

The efficiency of energy and climate policy for the building sector depends on the valuation approach

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	Object	Owner	user	producer	Overall economy	Energy transition
Problem of evaluation						
purpose	Ecological - proof of keep the limits of EnEV/EEWärmeG	Economical – evaluation of effects of alternative measures	Economical – evaluation of living costs	Economical – evaluation of financial impacts on the company	Abatement of negative emission (GHG)	Implement energy transition
objective	**Identify efficient solutions related to primary energy**	**Identify Economical efficient solutions**	**Identify Economical efficient solutions**	**Minimise costs related to the company and maximise the earning**	**Identify cost efficient solutions**	**Identify economical efficient solution within the political process**
Valuation rules						
approach	Energetic balancing according to DIN 18599 focus primary energy	Profitability analysis (complete finance plan as the optimum manner)	Finance plan	Shareholder-value	Efficiency of Abatement costs	Profitability analysis (complete finance plan as the optimum manner)
System boundary horizontal	construction	Conatruction (+transport, energy production)	Rental unit (+tenant electricity building)	Depends on the companies' performance. Normally just a share of the building	Federal Republic of Germany (all sectors)	Federal Republic of Germany (connection of all sectors)
System boundary vertical	Utilisation phase	Construction and phase of use. If applicable across buildings	Individual phase of usage		Whole Life cylce	Phase of construction and usage
Valuation background	Generalise input data for validating the energy balance and determinate political factors for primary energy	Construction and debt costs, legal requirements, absorption capacity of the markets for necessary levies	Cost of living (Net rent, "cold", "warm" additional costs	Real cost structures including coaching, risk of liabilities, legal requirements, market demand	Real abatement costs and effect on stakeholder on project level on-site	Construction and debt costs, legal requirements, absorption capacity of the markets for necessary levies
Valuation result	**Technical optimised result in case of primary energy demand**	**Economical optimised – on-site**	**Economical optimised solution at the residence**	**Economical optimised solution for companies**	**Across sectors: abatement costs of possible measures**	**Economical optimised solution within the political process**

The different perspectives follow different valuation approaches in efficiency measurement. "Efficiency" of climate protection or energy saving measures in the building sector is a specific, non-transferable size of the selected valuation approach.

The single evaluation approaches (and therefore also the results) are connected

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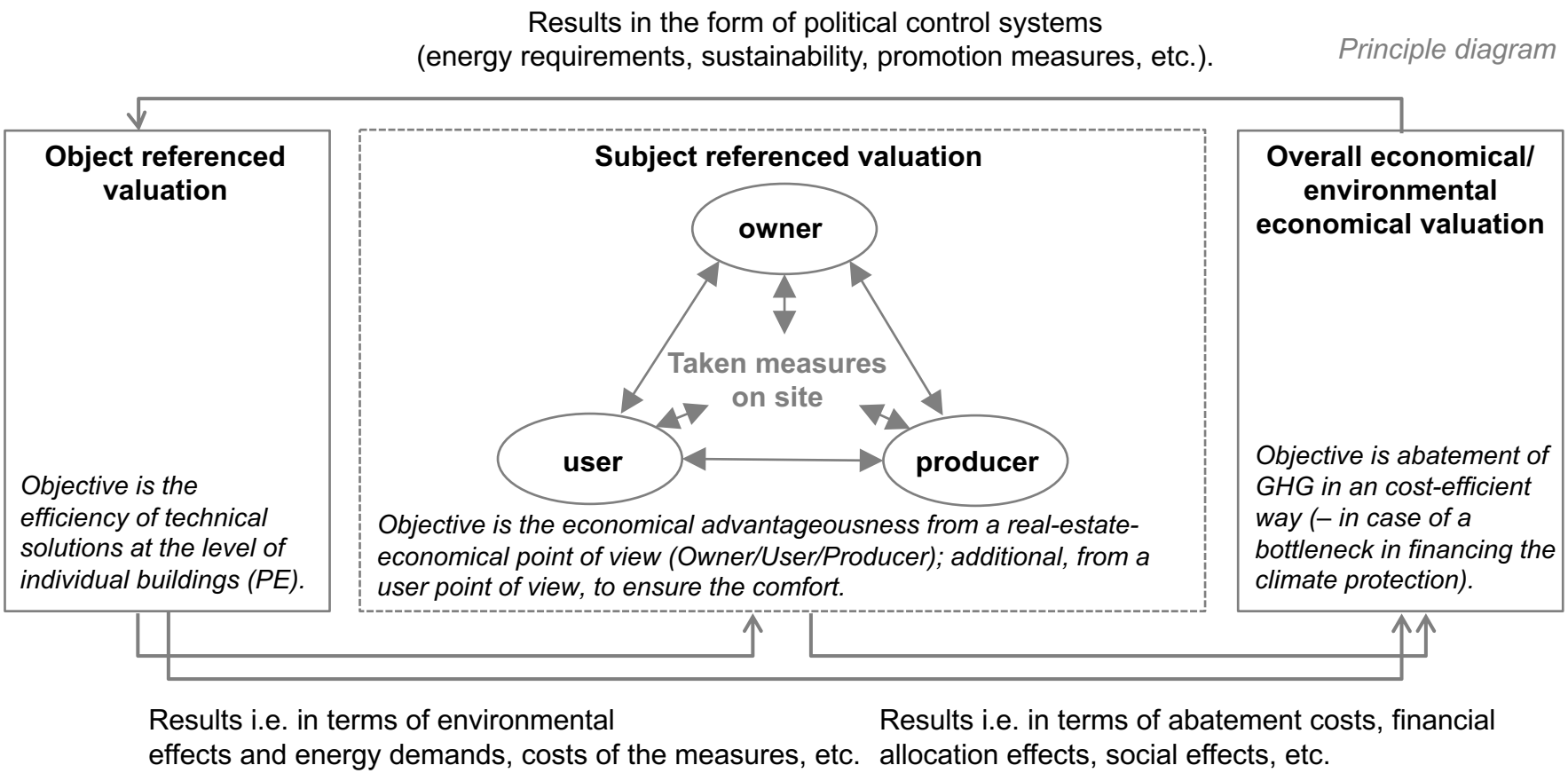
Principle diagram



The systematical dependencies are more complexes than the current implementation strategy might suggest. Where is the bottleneck of the energy and climate politic in the building sector?

Review and view on the novella of the energy and climate politics for the building sector

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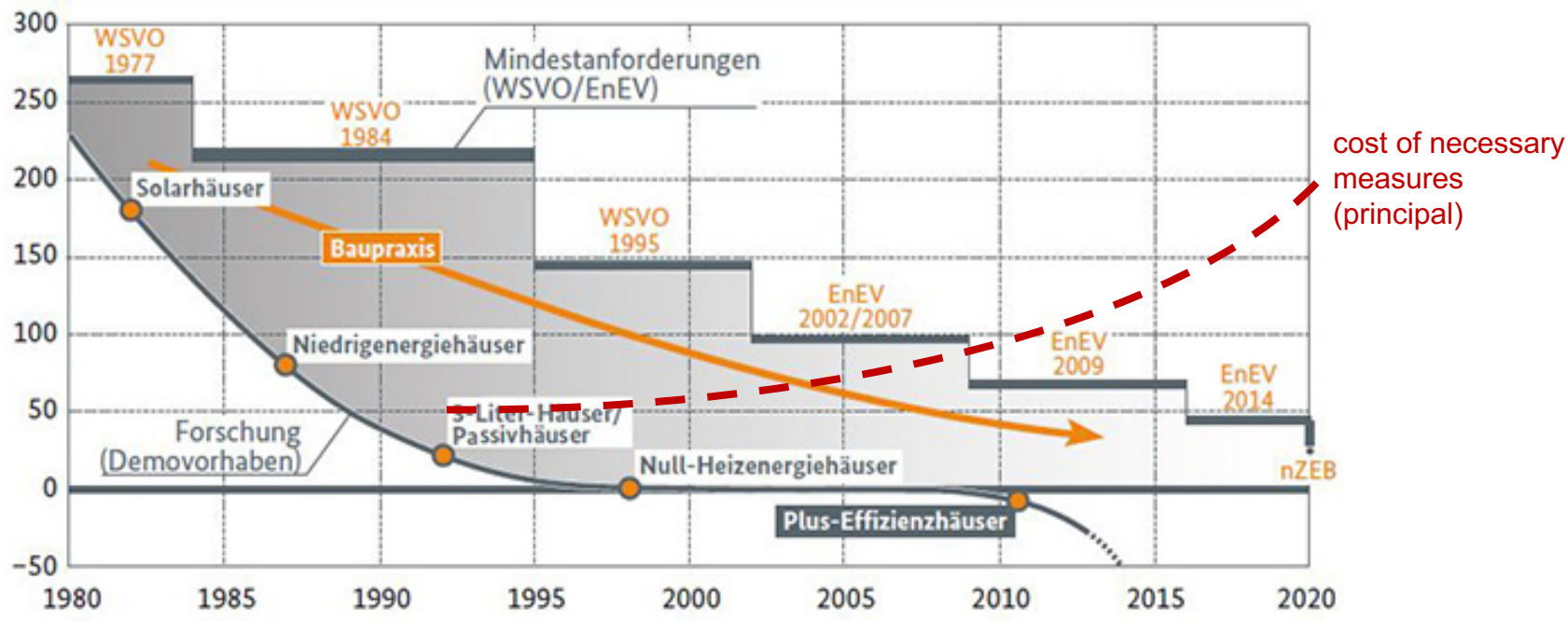
Development of the energy saving ordinance (EnEV) and its principal cost effects



The political strategy aims continuously to decrease the energy efficiency of the building sector by tightening the energy saving ordinance (object related valuation). The German engineering skills meet the challenge in an outstanding way, so the technical implementation is no problem.

But the costs of necessary measures decrease with every amendment of the EnEV.

Economically efficient vs. Economically efficient? Possible misunderstanding in politics?

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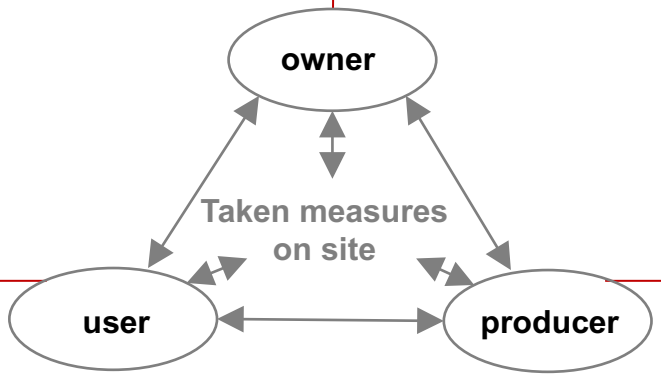
Economical objectives and issues of real estate stakeholder in energy and climate policy

Objective: Maximize the to the building fixed capital
Questions: What is the investment for the energy efficiency measure and is still affordable?
How economically profitable is the investment?

Objective: Maximize the cost-benefit-ratio
Questions: How does an investment in energetic measures effect the cost of living?



Objective: profit by planning, constructing, operating, marketing
Questions: how to optimize real estate energetically during planning, construction and operating phase

The economic benefits of an option of action compared to another action depends on the subjective evaluation perspective, not on the basis of technical evaluation approaches by EnEV/EnEG and EEWärmeG.

The learning from the last years have shown that the economic feasibility of the required measures on-site are not given from a subjective point of view: so the affordability and economical feasibility for owners and users are fundamental bottlenecks! In the development of the energy saving act/ordinance these stakeholders are insufficient recognized.

Not all control indicators are equally suitable for the efficient enforcement of policy objectives in real estate

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Minimum requirements of the alternative perspectives [excerpt]	**GHG-emissions**	**Primary energy demand**	**Primary energy demand**	**Heat demand**	**Trans-mission heat loss**
Connectivity to pol. overall goals (decarbonization, cost-efficient abatement of GHG) – *Overall economical/environmental economical valuation*	yes	limited	no	no	no
Allows standardized statements about the efficiency of the building – *Object referenced valuation*	no	yes	yes	yes	yes
Enables the technology-open optimization of the building – *Object referenced valuation*)	yes	yes	yes	yes	no
Focus on minimizing energy-saving costs (owner perspective)	no	limited	yes	yes	yes
Allows to identify and display true operating cost (user perspective)	no	no	yes	no	no
Allows scope for technological innovation (producer perspective)	yes	yes (in principal)	yes	yes	no
Space for inter-sector solutions (system limit / enforcement energy transition)	yes	yes	yes	no	no

One control indicator is not sufficient to meet the requirements of the individual views (stakeholder approach).

The control of greenhouse gas emissions and final energy is, systematically seen, a prerequisite for an efficiency-oriented energy and climate policy.

Conclusions for the successful implementation of the energy turnaround in the real estate sector

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1. Competitive target systems of stakeholders should be prioritized in a political process before the current control system of the energy turnaround can be further developed effectively.
2. A control system that aims towards efficiency and effectiveness needs carefully selected targeted-indicators in order to intensify the stakeholders adequately and to secure their implementation contributions.
3. The financial effects of alternative options for energy and climate policy for real estate have to be finally evaluated in a systemic context in order to achieve an efficient and socially balanced burden distribution.
4. Purpose-based valuation methods still need to be developed (depicting the decision situation of the stakeholders).
5. Due to the high complexity, accuracy should be taken (more important than speed), if misallocations, failure, and social imbalances are to be avoided.

Thank you for your attention

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Link to download the working paper:
www.real-estate.bwl.tu-darmstadt.de/media/bwl9/dateien/arbeitspapiere/Arbeitspapier_34.pdf

Link to the project website:
www.real-estate.bwl.tu-darmstadt.de/praxistransfer/praxisorientierte_forschungsergebnisse/konzeptionelle_ansaetze_zur_umsetzung_der_energiewende_im_gebaeudesektor.de.jsp

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