

Willkommen
Welcome
Bienvenue



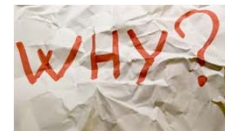
NEST

A Research and Technology Transfer
Platform of the ETH Domain

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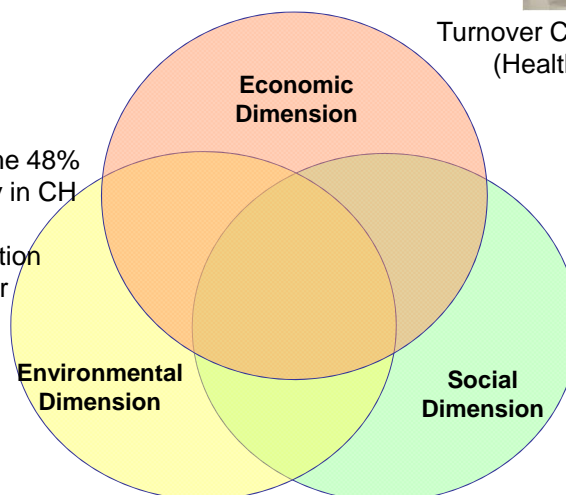
Construction is key for sustainability



Turnover CH 2011: 60 Bn
(Health Care: 65 Bn)

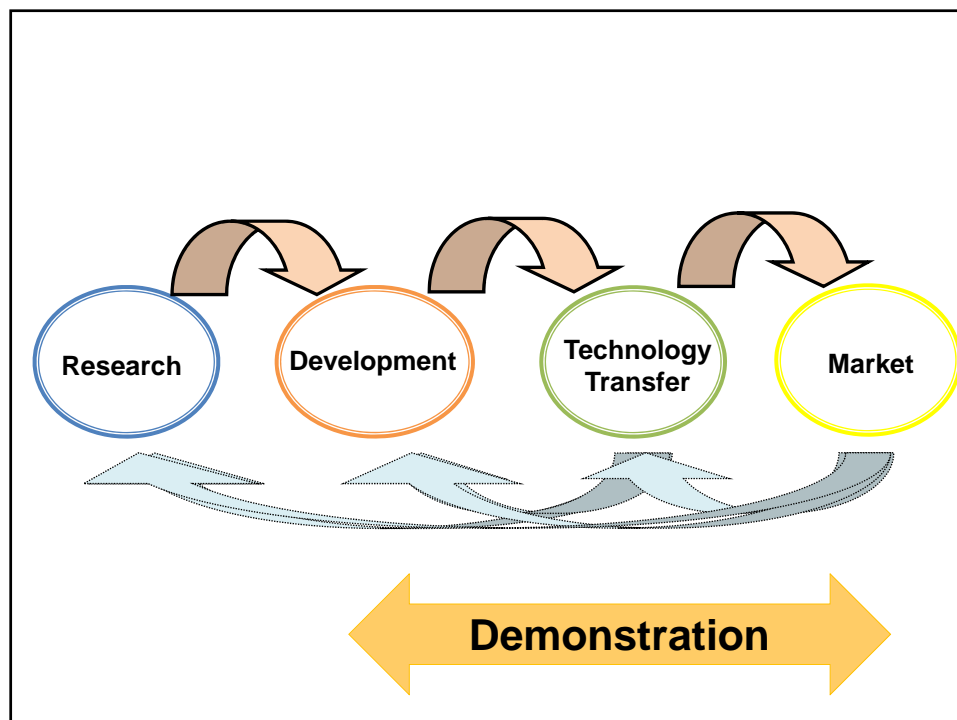
Buildings consume 48%
of the end energy in CH

70 Mio t construction
materials per year



NEST addresses Challenges in the Construction Sector

- Highly fragmented sector
- Low innovation dynamics
- Flat learning curve
- Focus in R&D on materials and systems, hardly ever on integration and user behavior
- Low dissemination of new technologies into the market



NEST: Exploring the Future of Buildings

A Holistic, Dynamic and Flexible Demonstration Platform



Large scale
plug-and-play
Living Lab

2'500 m2 of
innovation
space

Energy Hub
Interface

Public Private
Partnership
(Research –
Business –
Society)

ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

EPFL
ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

eawag
aquatic research

EMPA
Materials Science & Technology

Vision: Exploring the Future of Buildings



Flexible platform for innovation under real life conditions accelerates innovation and reduces time2market:

- Real user testing (e.g. guest house, apartments, offices)
- Dynamic, adaptable, flexible and modular
- International contribution of best-in-class ideas, technologies and systems

New solutions, systems and technologies for local and global markets in the built environment:

- Boosting innovative edge of construction industry
- Stimulate growth in construction industry
- Technology Transfer Platform
- Attractor for national and international partners from academia and industry

Units are plugged into the backbone and can be replaced over time



1. Empty backbone



2. Units are plugged into NEST



3. Units are replaced by new ones

Innovation and research projects outside and inside the units during lifecycle drive a *constant innovation process*

A Holistic and Sustainable Approach



Current topics of interests:

- Natural living
- City lifting
- Lightweight construction
- Office of the future
- Glass architecture
- Modular housing
- Digital living

Innovation Example – Units under development

Natural living (Empa):

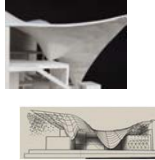
- Innovative use of the renewable wood resource



- Bio-engineered wood panels
- Wood insulation fiber boards
- Cellulose aerogels
- Weather resistant exterior wood surfaces
- Textiles made of biopolymers
- Flame retardant flexible PU foams

HiLo (ETHZ):

- Ultra-lightweight construction, adaptive facades



- Extremely lightweight floor system, low-energy heating and cooling system
- "Flexibly modular", prefabricated building kit system, robotically controlled
- Faster fabrication setup based on fabric formwork
- Fully integrated and adaptive facade system for low energy and zero emission building operation

City Lifting (EPFL):

- System for easy extension of buildings



- Pre-fabricated flexible modules
- Hybrid timber-composite construction

Meet2Create (HSLU):

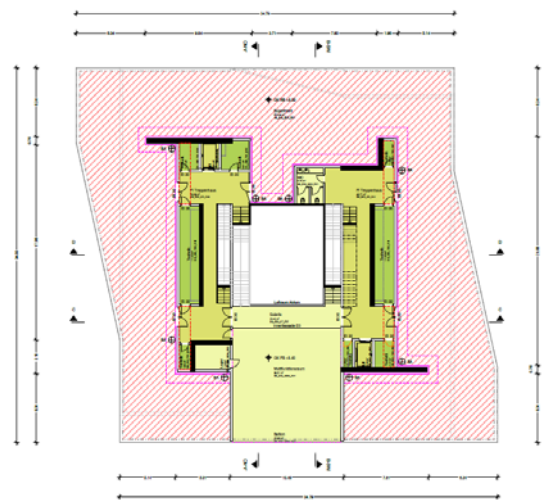
- Office of the future



- Flexible setup of offices for mixed usage
- Optimal support to drive innovation processes
- Assess tools to boost collaboration work

OG2 - Hölleebene

LEGENDE	
NUTZUNGEN	
	Exterieur
	Allgemein
	Treppenhaus
	Technik





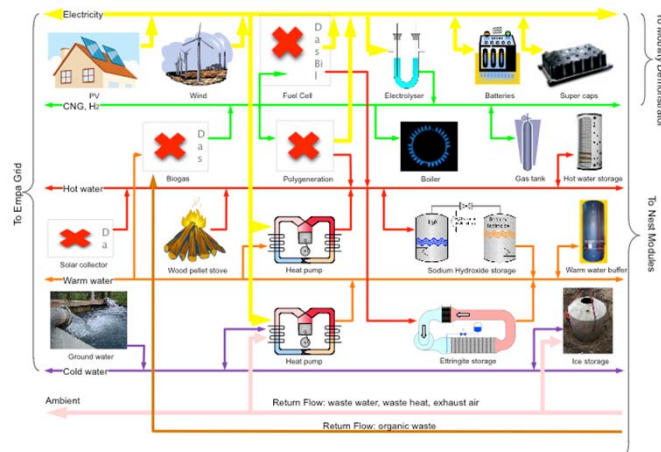




Innovation Example – Energy Hub



- NEST units are inter-connected and connected to the Grid through an experimental Energy Hub to optimize energy efficiency



- Production, storage and re-use of energy (electricity, water, waste)
- Combination with Mobility Demonstrator (excess electricity -> hydrogen -> cars)
- Develop generic district-level energy hub

Timeline



- Backbone operational Q1 2015
- First units operational Q2 2015
 - Office of the future HSLU
 - HiLo (Leight weight) ETHZ
 - City Lifting EPFL
 - Natural Living Empa
- Second wave of units operational Q1 2016
 - International call End of 2013

Partner Collaboration Model



Implementation partner
Support development of innovation units

Technology partner
Support Implementation of cross-sectional advanced technologies in whole building

Research partner
Involved in research and development projects

Supporter
Support NEST with special products and services

Value Proposition



For business:

- Decrease Time2Market for new products and services
- Increase reach to startups and new ideas
- Access to Swiss and international network of researchers and businesses
- Branding, marketing and communication support (events, trainings, newsletters, brochures, website)

For academia:

- Challenging environment to solve problems
- Fertile ground for continuous research
- Access to business

NEST: An opportunity for you !!

