

INVITATION

Réf. : Activ/TR/RIKLUX20/Invitation.200317

Luxembourg, le 10 février 2020

L'Uni.lu, Neobuild, le CNCD, le LIST et l'OAI, avec le soutien de Luxinnovation, ont le plaisir de vous inviter à la 4^e rencontre « RICLUX – Recherche => Innovation + Construction »

Présentations de recherches menées en architecture et en ingénierie suivies de mini-workshops

Mardi 17 mars 2020 de 16h à 18h à la Chambre des Métiers, Luxembourg-Kirchberg

Programme

16h00

Accueil
Jos DELL, Président OAI
Claude Meisch, Ministre de l'Enseignement supérieur et de la Recherche



16h20

Sustainability and Circular Economy - Institute of Civil and Environmental Engineering

Prof. Danièle WALDMANN

Presentation of the current research activities of the Institute of Civil and Environmental Engineering (INCEEN).



3D Modelling to Optimize Flood Hazard Modeling in Densely Populated Urban Areas

Dietmar J BACKES Dipl Ing, MSc

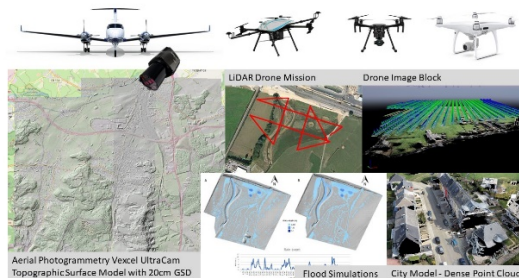
Supervisor: Felix Norman Teferle, Prof. Dr.-Ing.

Cooperation partner: Schumann, Guy J-P., MA, MSc, PhD (RSS-Hydra)



The occurrence of urban flooding following strong rainfall events may increase as a result of climate change. Urban expansion, aging infrastructure and an increasing number of impervious surfaces are further exacerbating flooding. To increase resilience and support flood mitigation, bespoke accurate flood modeling and reliable prediction is required.

However, current modeling still relies on digital terrain models with low resolution in comparison to detailed and complex urban structures. In this study, we acquired high resolution 3D dataset from airborne, drone-based as well as terrestrial platforms based on photogrammetric methods and laser scanning over an area which has been prone to localized flash flooding in the past. Our investigations will provide optimized flood hazard modeling which will help to avoid and mitigate urban flooding in urban areas.



Fast Erection of Steel Structures for Buildings – FEOSbild

Taygun Firat YOLAÇAN, M. Sc.

Supervisor: Markus SCHÄFER, Prof. Dr.-Ing.

Funding: FNR Bridge Program in cooperation with ArcelorMittal

Steel-concrete composite construction methods provide sustainable solutions for multi-story buildings. The building material steel has outstanding mechanical properties, which provide high load bearing capacity with slim structural components. Moreover, steel is entirely recyclable and this limits carbon food print of the construction industry. However, in Central Europe only a small fraction of multi-story buildings is built with steel-composite construction methods. This is due to the fact that many construction companies are oriented to classical concrete construction. To increase the market share of steel-composite structures in multi-story buildings new business models have

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to be developed. However, this requires overcoming scientific challenges. Therefore, this research aims to invent new novel steel-concrete composite connectors such as friction-based assembly technologies and “plug-in” consoles, to provide fast and straightforward assembly process on the construction site. Thereby the steel construction method can be established as a “prefabricated construction method”.

A Design Model for Dry-Stacked Masonry Blocks

Dr. Gaël Gelen CHEWE NGAPEYA

Supervisor: Ass.-Prof. Dr.-Ing. Danièle WALDMANN-DIEDERICH

Cooperation partner: Contern Lëtzebuerger Beton S.A.

Mortar bonded masonry is one of the oldest construction technics traditionally used around the world. However, dry-stacked masonry (DSM) is a competitive system that confers significant assets to masonry in the sense that, concisely, it saves construction time, requires less skill labourers and ease the construction as well as the de-construction. Despite all this major benefits, the current use of DSM is hindered by the geometric imperfections of the block units and the lack of adapted design codes. Indeed, the block geometric imperfections, i.e. the bed-joint roughness and the height difference, cause a significant uneven load-distribution in DSM, which generally leads to a premature cracking and a drop of the wall compressive strength. A design model for predicting the load-bearing capacity of DSM has been developed, while taking into account the effects of the block geometric imperfections for a safe design.

16h50

Université du Luxembourg

La Petite Maison.

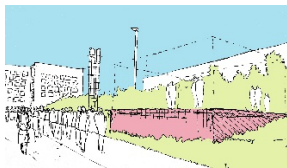
Projet-process sur le thème de la circularité dans le cadre de Esch 2022

Carole SCHMIT, Architect, Guest professor uni.lu,

Department of Geography and Spatial Planning. University of Luxembourg



Le projet “Petite Maison” est expérimental dans la mesure où il met l’accent sur le processus de co-création, construction, exploitation, dé- et reconstruction d’une petite bâtisse en appliquant le principe de circularité. Ce projet est un partenariat avec les acteurs-clé au Luxembourg actifs autour du sujet de la circularité, en particulier celle des matériaux. Puisqu’il souhaite s’intégrer dans le contexte de la future capitale culturelle E22, le projet assurera également un programme ouvert au grand public au sujet des matériaux, de leur réutilisation, des nouvelles technologies et systèmes, et de l’histoire et de la genèse des matériaux, grâce à la participation d’acteurs de différents champs de compétence, tous engagés vers une transition des modes de vie visant à protéger les ressources de la planète comme bien commun.



The Agricultural City Towards an Agro-Urbanism with a Focus on Luxembourg

Ivonne WEICHOD, Dipl.-Ing. Architect and Urbanist

Doctoral Researcher at the Department of Geography and Spatial Planning. University of Luxembourg



The challenges of urbanisation, the decline of arable land and the rise in climate uncertainty across the world raise concerns about food security for a booming global population. Understanding how sustainable local food production can be implemented in this context is, therefore, crucial. One key to meeting this challenge is the exploration of alternative scenarios of densification in the built environment without giving up productive agricultural land. This talk reflects on work undertaken as part of a PhD research project on the territory of Luxembourg, which is highlighted as an example because of the extreme contradiction between its economic, political and environmental performance. During this presentation, a “best case” scenario concerning an alternative land configuration in Luxembourg will be discussed. Contribution will be made by repositioning agricultural in planning through underlining it by concrete examples from other parts of the world

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Model's for Reuse and Recycling of Architecture

Marielle FERREIRA SILVA
Dipl.-Ing. Architect and Urbanist
Doctoral Researcher at the Department of Geography and Spatial
Planning.
University of Luxembourg



Marielle FERREIRA SILVA is an architect, urbanist and currently a doctoral researcher at the University of Luxembourg. The thesis is a part of the research project Eco-Construction for Sustainable Development (ECON4SD) financed by the Europe Union in partnership with the University of Luxembourg. This research has an interdisciplinary approach, that professionals work together from a different domain, like architecture, structures, materials, energy consumption, and monitoring systems, which she is responsible for developing all the matter of architecture. Owing to the increasing demand for multi-use, re-usable, and resource efficient constructions, the research aims at developing modular, adaptable, dismantable and recyclable typologies buildings. Three building typologies were developed: "Slab", "Tower" and "Demountable" that will be present in the seminar. These prototypes address the ecological challenges and house-shortage issues in Luxembourg and can be adapted to other cities in the world.



17h20

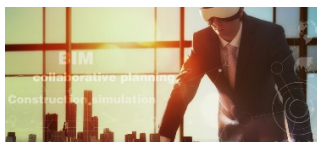
Luxembourg Institute of Science and Technology

4D Collab : Vers de nouveaux outils interactifs de simulation 4D pour l'aide à la décision collective

Intervenant : Calin BOJE, LIST
Partenaires luxembourgeois: Polaris Architects et Felix Giorgetti
Langue : anglais



A la croisée des axes de recherche en technologies de l'information pour la construction et de l'ergonomie, le projet 4D Collab s'intéresse à l'étude des pratiques et usages collaboratifs de la simulation 4D. Conscients de l'intérêt de la 4D et de sa sous-utilisation dans la phase de pré-construction, les chercheurs ont travaillé à l'émergence de pratiques innovantes afin de répondre aux besoins des professionnels et ont proposé de nouveaux outils 4D interactifs supports à la collaboration.



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DigitalDeconstruction ou comment supporter les stratégies de déconstruction grâce au digital

Intervenant : Annie GUERRIERO, LIST

Partenaires luxembourgeois : Schroeder & Associés,
Administration des Bâtiments Publics, Ministère de l'Environnement,
CRTI-B et BIM-Y



Les déchets de construction représentent 33% des déchets produits au sein de l'Union Européenne. Si dans la plupart des pays de l'UE, 50% de ces déchets sont recyclés, il s'agit le plus souvent de procédé de valorisation à basse valeur ajoutée tels que le remblai. Aujourd'hui, le réemploi et le recyclage à haute valeur ajoutée représentent moins de 3% de ce volume. Ce constat a poussé chercheurs et professionnels à s'associer dans le cadre du projet DigitalDeConstruction afin de proposer une solution d'aide à la décision permettant d'établir des stratégies de déconstruction. Cette solution sera testée au sein de plusieurs projets pilotes en France, Belgique, Pays-Bas, et Luxembourg.



17h50

Neobloc : des briques de terre crue luxembourgeoises

Intervenant : Régis BIGOT

Partenaires : Neobuild

Développement d'éléments constructifs sur base de déchets terreux d'excavation



18h-18h30

Mini-Workshops

Infos

Mardi 17 mars 2020 de 16h à 18h

Chambre des Métiers, 2, circuit de la Foire internationale,
Luxembourg
(Plan d'accès sur www.cdm.lu)

Les présentations et discussions se tiendront en **langues anglaise, allemande et française.**

La séance sera suivie d'un **verre de l'amitié.**

Prière de vous inscrire sur le site www.oai.lu rubrique « [agenda](#) »
avant le 13 mars 2020

Salutations cordiales,

Pierre HURT
Directeur OAI