

## LCT One and IZM: BIM and Platforms will change the Building Process

### PROJECT SUMMARY

**LCT One and IZM** are two pilot projects showcasing the innovative new building system LifeCycle Tower delivered by Cree together with construction company Rhomberg and BIMobject, an innovative digital content management.

The projects go beyond simply digitalizing existing construction processes, and instead strive to establish a completely new approach to “construction” as we know it today. The objective is to create a digital platform for the collection of all relevant information on building projects, statutory conditions, building materials, building components and stakeholders in the project so that it is available and can be used and developed by all. This affects all those involved – tradesmen, engineers, architects, authorities, service providers, contractors, customers, etc.



### STAKEHOLDERS

#### CREE

**Cree** is the developer of the innovative building system LifeCycle Tower. With the LifeCycle Tower, Cree delivers the groundbreaking technology necessary to build high-rise buildings using system construction methods that are consistently and logically based on the raw material wood. Separate components of the Cree building technology (core, ceiling, facade columns) can be prefabricated industrially as standardized manufactured products and used as modules.

#### RHOMBERG

As a fourth generation family company, the **Rhomberg Group** stands for quality, sustainability and new concepts in construction, railway technology and resource management. Founded in 1886, Rhomberg is a strong corporate group and delivers projects from one-off, customized solutions to extensive major projects for public-sector clients. Striving to foster both innovation and sustainability, Rhomberg is the founder of Cree and delivered the projects LCT One and IZM as the general contractor.

#### BIMOBJECT

**BIMobject** is Europe's largest and fastest growing digital content management system for BIM objects. The company's unique solutions provide development, hosting, maintenance, syndication and publication of the digital replicas of manufactured products – BIM objects. Architects, Engineers, Constructors and Designers can download free, manufacturer specific BIM objects from leading brands and utilize them for any BIM software throughout the entire design, documentation and construction process. The unique technology platform was chosen by Cree as the basis for delivering its building system LifeCycle Tower.

### THE ROLE OF BIM AND 5D

The predominant method used today in building construction can still be compared to what in other industries is referred to as prototype construction. This means that each building is fundamentally designed from new. Experience gained from previous projects is mostly not utilized, and is therefore lost. The LifeCycle Tower system utilized in the projects LCT One and IZM is built on the concept of system construction, whilst still enabling the construction of individual and innovative buildings. Utilizing **Building Information Modeling** is a key factor in this goal.

Cree, the innovator of the timber-hybrid construction method have taken the first steps in scaling up their supportive BIM technology for a global roll-out supported by BIMObject and the Hercules platform. For Cree, it was necessary to find a digital solution that mirrored the innovative building systems, that they can use all over the world. Cree as a worldwide platform will offer total solutions for buildings and all necessary details. The international licensing roll out of the Cree solution will be assisted by BIMObject's unique cloud technology for distributing digitally represented building elements, assemblies, components, templates and solutions that support the whole life-cycle of the Cree building in a controlled fashion.



In the Cree BIM processes everything is modularized and pre specified by what is defined in the catalogue of BIM objects for the designers. Doing so, Cree manages to create a process that is totally industrialized, and montage on the construction site is down to a five man operation with eight days of work for an eight story building.

Only Manufacturers that are available in the digital ecosystem is qualified for being purchased and by limiting the options, Cree is securing delivery time, quality, Carbon conservation and output as well as fixed prices. The new approach is intended to reduce the use of resources and energy throughout the lifecycle of buildings and is considered to be a response to the demands imposed by climate change.

In the case of the **LCT ONE** prototype it was possible to reduce the construction time by a factor of 3. Apart from more efficient project delivery, this also enabled additional benefit in that any disturbance to neighbors and general traffic was minimized. The high degree of prefabrication makes fast assembly possible (at the LCT ONE it was possible to erect one floor including facade in one working day) and greatly reduces the requirement for storage areas during the construction phase. A third advantage of the prefabrication of elements is that less noise and dust is generated at the construction site.

Systems like the **LifeCycle Tower** in combination with platforms such as **BIMObject** could **completely revolutionize construction** as we know it today. New instruments and tools that enable an early start in the planning of production have been created to maintain a complete overview. In order to make this happen it is necessary to create a complete digital twin of the whole building with all components and module. Experts can simulate and optimize directly every new product, situation and decision on the twin. Typical structural designs, mechanical, electrical and plumbing designs are thing of the past. This means the contemporary construction process, from the design and construction aspects are no longer exists with the exception of prototypes. All standardized buildings are able to fulfil the requirements for a digital design and building process. In fact, there are no reasons to have a comprehensive planning and design approach during construction. Every detail, every workshop planning, every bill of material is finished and available, before the first excavator starts working. The functions of architects and building designers will change. New players will become part of the process – from IT, from community management, from other areas which up to now have been completely excluded.

## PRESENTORS

**Hubert Rhomberg**, CEO Cree GmbH, Civil Engineer

**Harald Professner**, Rhomberg Holding, Global Business Development, Civil Engineer

**Rainer Strauch**, Cree GmbH, Director international Technical Operations, Civil Engineer

**Stefan Larsson**, CEO & Founder, BIMObject AB