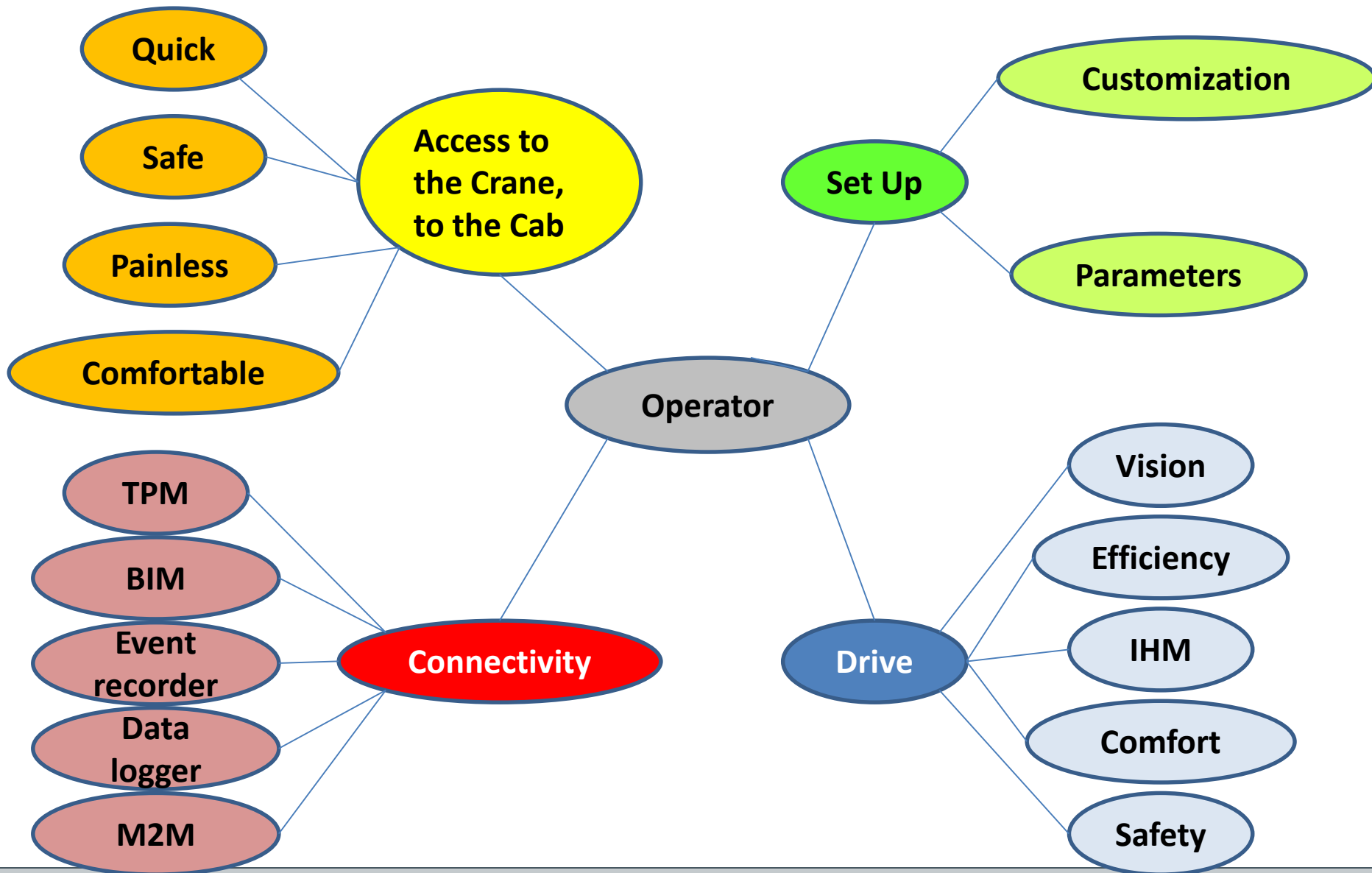


Technology for Tower Crane Operators

A Look Into The Future

Eric Pommier,
Vice President Engineering Tower Cranes

Value Streams for Crane Operators

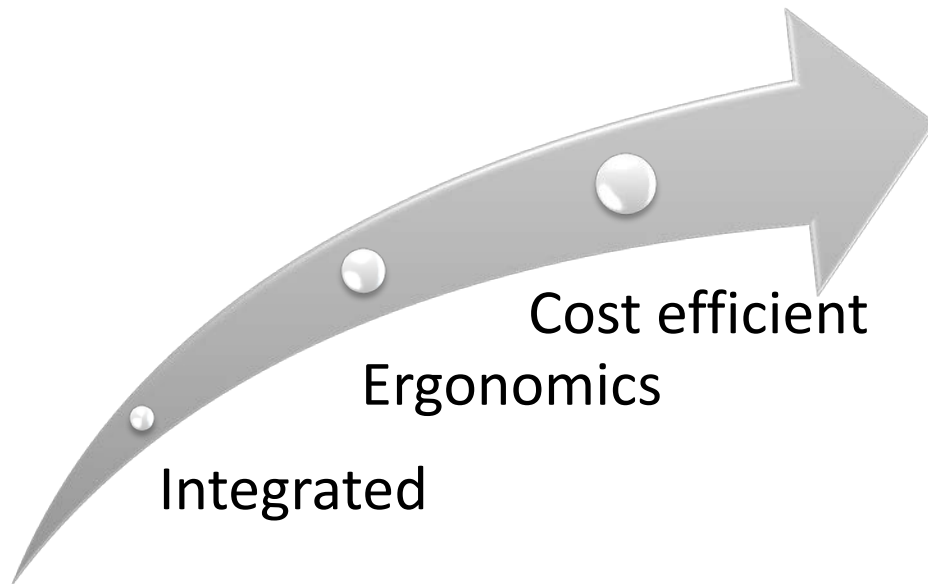


Access to the crane

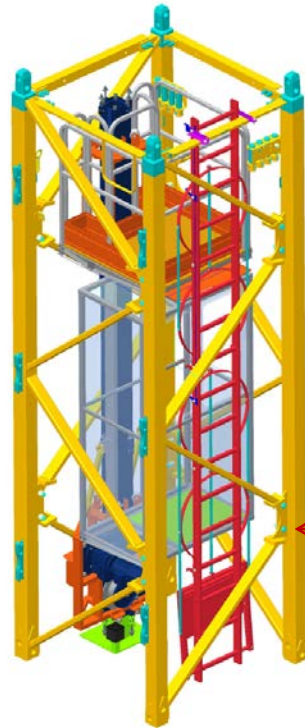
Trends and part of the social responsibility of the enterprise:

- Population is aging
- Ladder, with hoop guards or safety cage, platform with guard rails could be perceived as barriers for people with handicap.

Lift for drivers and erectors is becoming obvious solution.

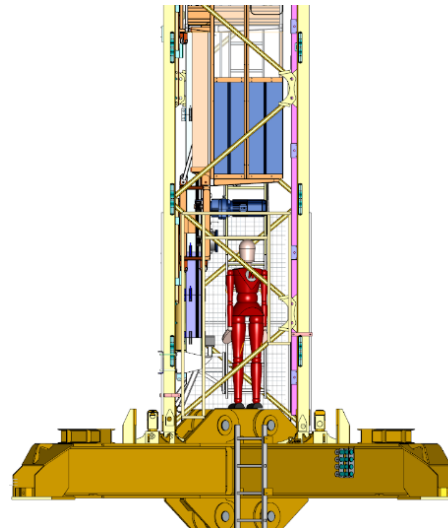
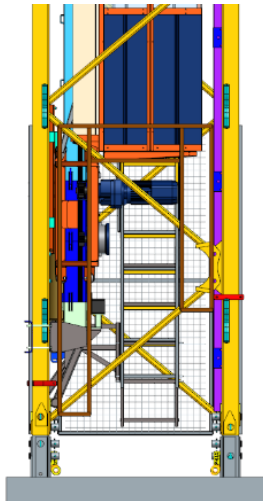


Access to the crane



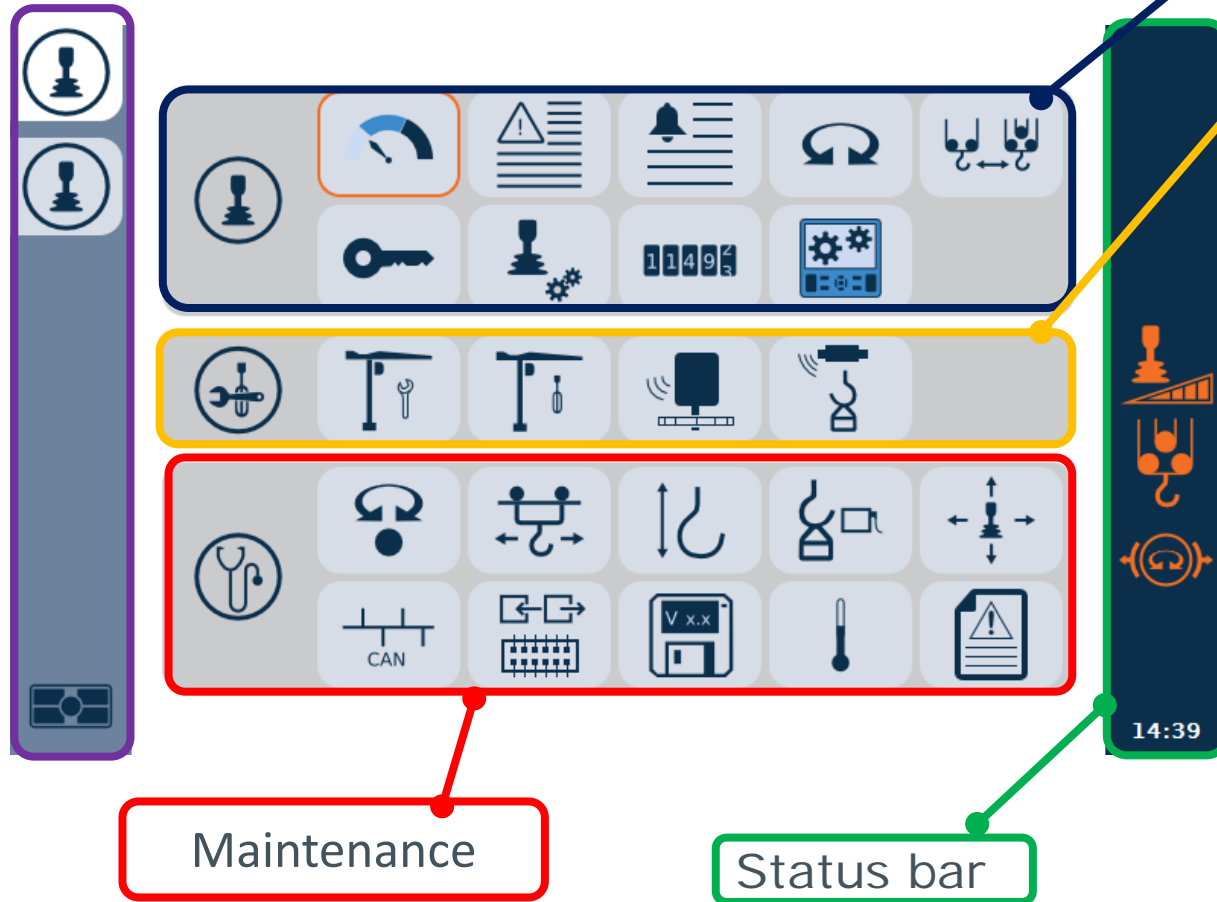
Service Platform for assembly and disassembly of crane masts.

Lift for operator



Set Up of the crane

Crane operator section – Display



Crane operator

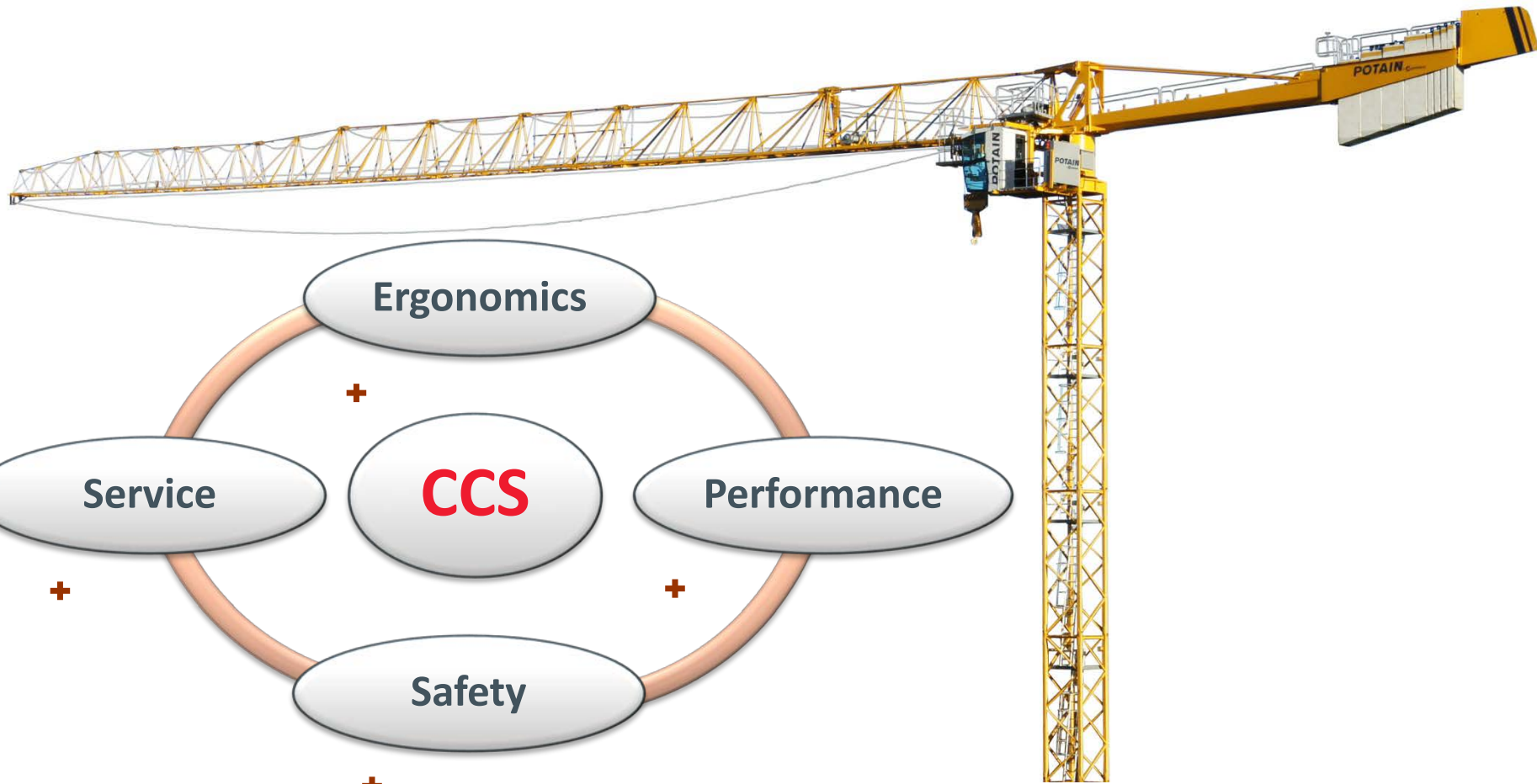
Settings and teach in

Maintenance

Status bar

- Weather vaning
- Reeving change
- Default list
- Command setting
- Command sensibility
- Sportive or smooth drive
- Video connection

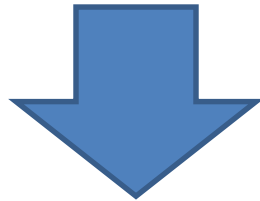
Crane operating - Drive



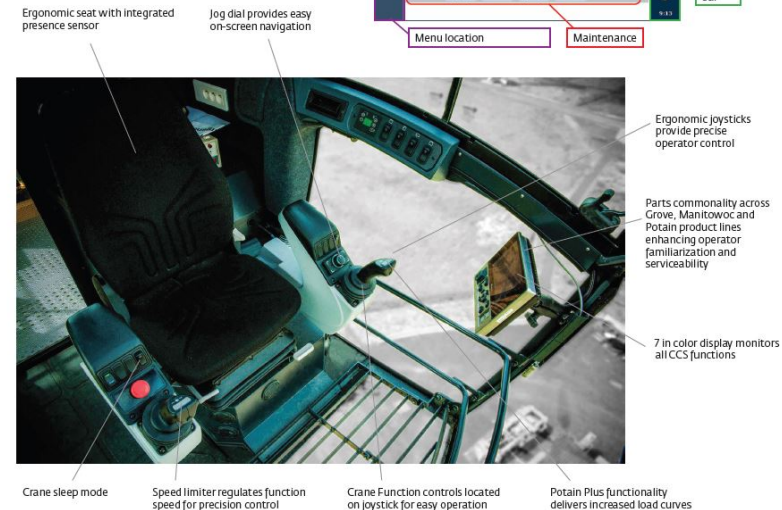
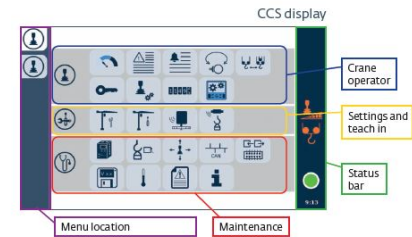
Crane operating - Drive

Expectations and vision

- Comfort thanks to the position of the body, the hands on the joysticks
- Comfort and protection against weather conditions
- Data display, user friendly environment with bright screens, jogdial, indicator
- Automation of cycles, automation of reeving changes, assistance of drive
- Safety thru the Control Command System
- Vision by camera
- Anti-collision system
- Learning procedures

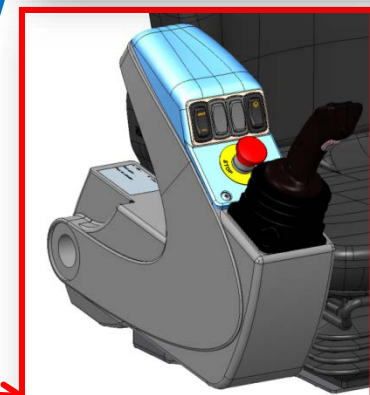
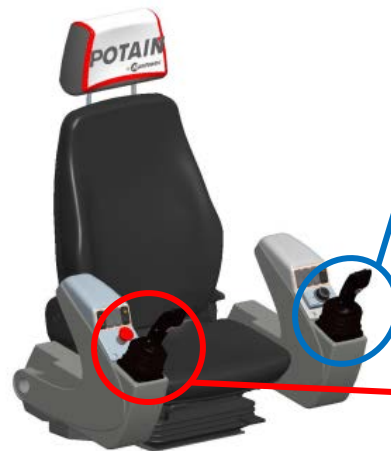
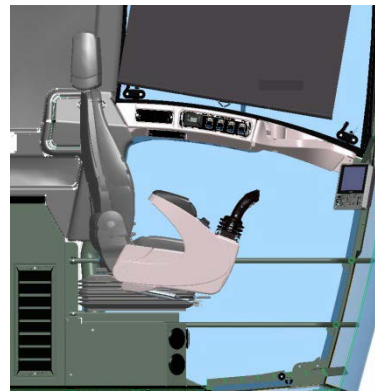


Combination of the crane technologies and the skills of the trained operator provide the efficiency on the job site



Crane operating - Drive

Crane operator section – driving cockpit



Connectivity

About connectivity, sky is the limit
Applications are multiple
Many values streams from real time data access to historical data for different type of users

On-crane Access



Network & Infrastructure

On-site Access



Diag & Prev Maintenance



Fleet BIM



PC MOBILITY

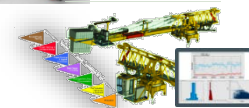


Business support

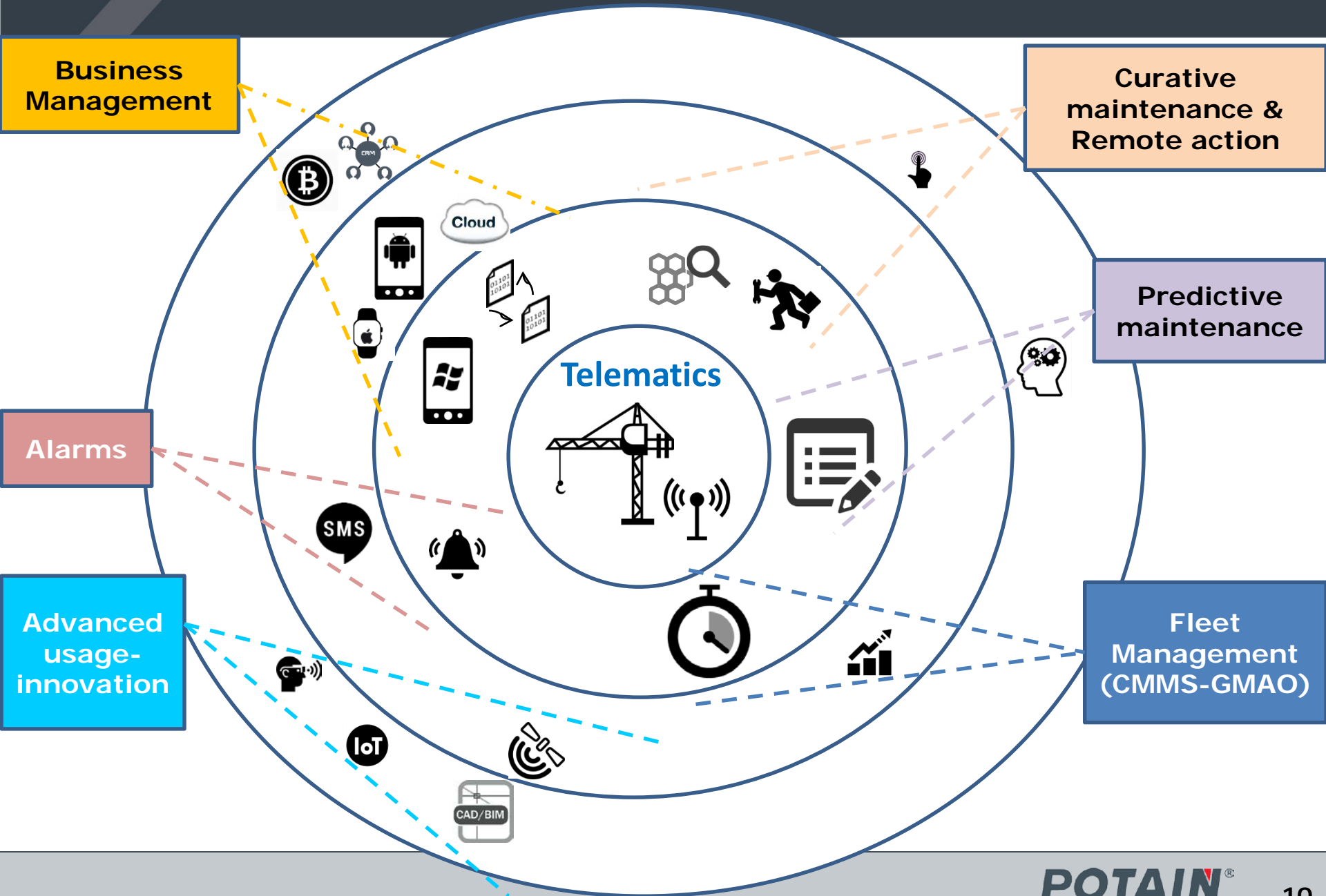


IS Intégration

Warranty management, CRM...



Potential of Telematics



Practical visions of applications

Crane Dealers, Crane Fleet Maintenance Companies



Construction Jobsite Management



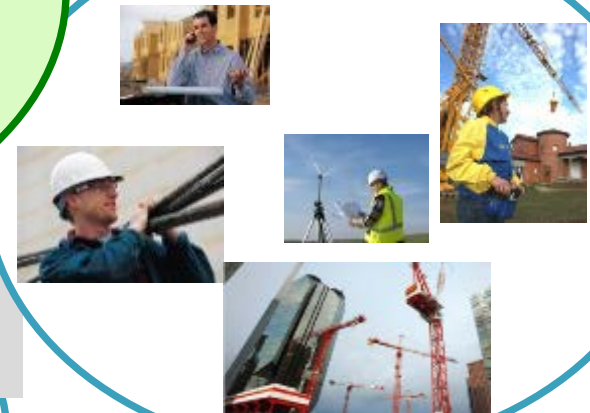
Designs and manufactures customized cranes



Crane activity



Jobsite Activities

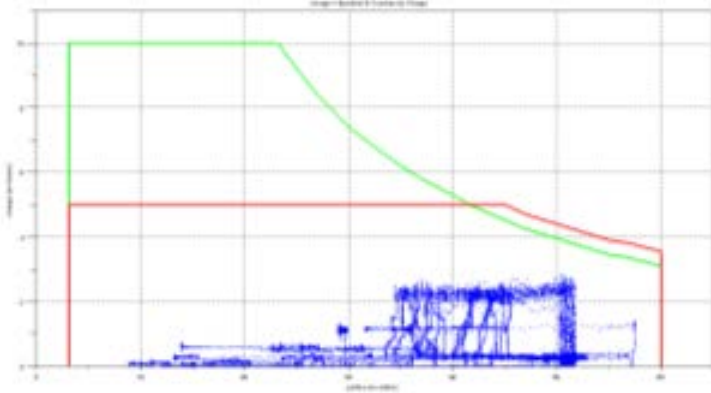


Countries or Legal Requirement (Accident Damage...)

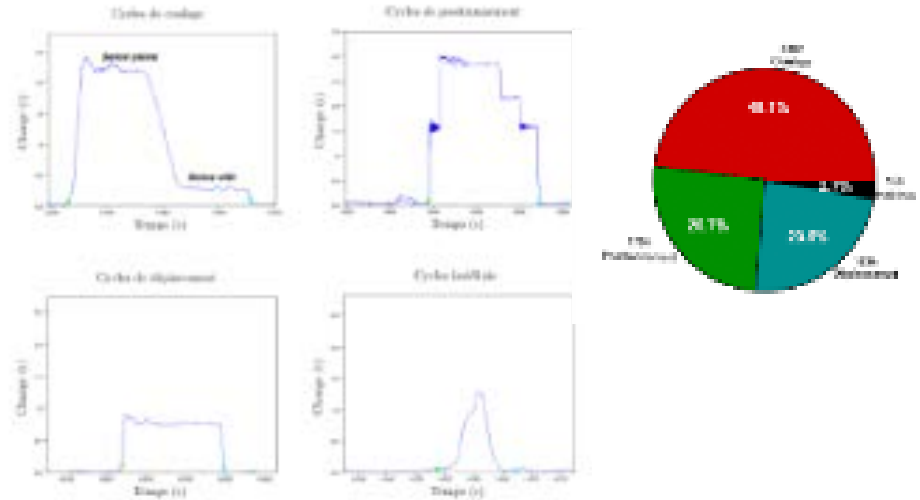


Scientific approach of the crane utilization

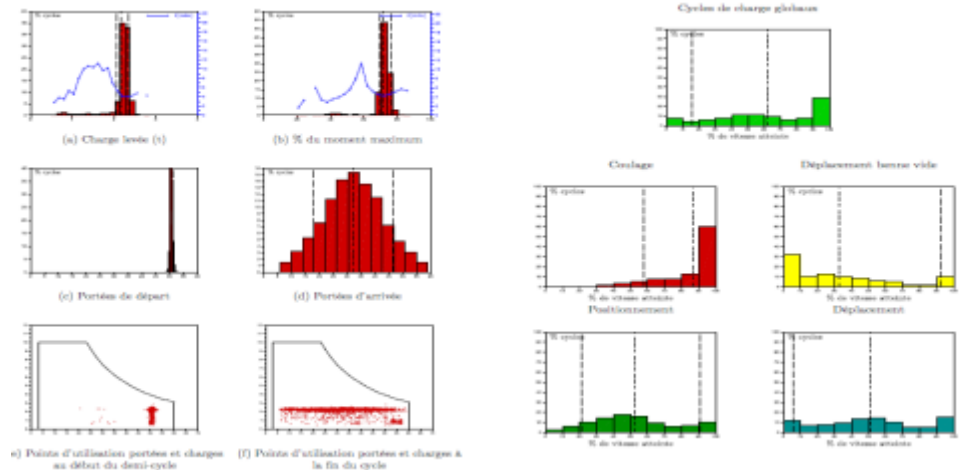
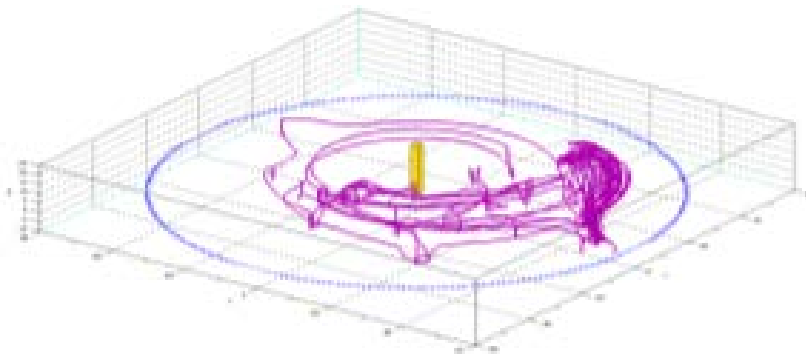
Points of use of the crane load curve



Features of the crane



Hook Movement (« 3D »)



The distant future

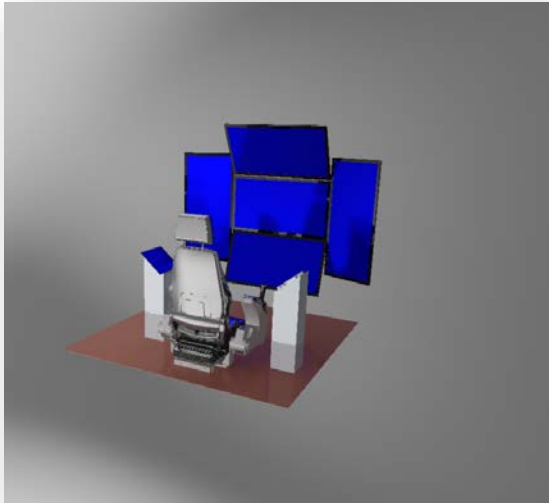


The distant future

What could be the future ?

- Opening of a new labor market: easy access to the cab at height
- Attractiveness of technology for the millennial generation

Supervisors in control room: replication of what happen in the crane cab, including the moves felt on the seat
New technology for remote control
Opportunities to drive several cranes by one driver on the job site but off the crane



Another vision...

The crane becomes the robot of the job site

Off line programming thru 3D models and BIM applications

Collaborative robot

- **Safe trajectories**
- **Optimization / minimization of the moves**
- **Intelligent collision prevention**

Communication for programmed maintenance

Monitored by the supervisor of the job site

The distant future

The crane business is on the journey to construction 4.0

