2022 Digital 360 Summit – Digital Infrastructure Panel
The CII-CURT OS2 initiative

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September 7, 2022

The collaboration between Construction Industry Institute (CII) and the Construction Users Roundtable (CURT) was created to launch a new R&D program that would develop a new business model for the construction industry, one that substantially improves the capital projects ecosystem to deliver greater capital efficiency for owners while simultaneously improving profitability for the supply chain. CII has led the research (R) and CURT is leading the development (D) through PrairieDog. PrairieDog's mission is to be the deployment vehicle for the OS2 concept into the market.

First let me explain what CII is for those in audience who may not be familiar with it. Construction Industry Institute, or CII, is an industrial organization comprised of more than 130 owners, contractors, and suppliers that has been in existence from the mid 1980' and is associated with the University of Texas. CII performs research and development to improve the engineering and construction industry. Work covers major industrial sections such as downstream and chemicals; power, utilities and infrastructure; facilities and healthcare; upstream, midstream, and mining; and manufacturing and life sciences

The construction industry is inefficient relative to the improved productivity observed in the automotive, aerospace, and even agricultural space. CII estimates that there is about 40% waste in projects. Imagine how many more critical projects for climate change infrastructures, hospitals, and energy projects could be built with the same amount of spending if we could eliminate the 40% waste. Many of the efficiency improvements researched by CII and being discussed at conferences like these such as integrated data attack a single part of the many processes involved with building projects. And although these improvements have been ongoing for the last five decades at least, we still have 40% waste. There is something missing in this prior work.

For the last three years at CII we have been researching a new business model for the construction industry. It's working title is called Operating System 2.0 to move beyond the first business model of the Industrial Revolution considered Operating System 1.0.

Traditionally the western culture for contracting has been adversarial based on distrust between parties. This is very inefficient as parties try to pass risk to others and add layers of protection for themselves. Additionally, as many of you here know, the construction industry is still based on old analog paper systems which we are simply digitizing.

So let me tell you about the new business model and the four areas of OS2 investigation. The first area is about creating a more collaborative community of parties who have common goals and over time will build many projects together each getting better as parties build experience and trust. It is not just for one project. Underlying the collaboration is transparency of risk to have meaningful discussions about how to eliminate, mitigate, or who best to carry that risk.

The second area of research is early supplier engagement and minimizing interfaces. Often the execution strategy is decided by owner, lead contractor possibly another major player early on and all other subsequent parties to execute the project are locked into that strategy. This blocks the possibility of the multitude of other suppliers to bring their best ideas to the table.

The third area of research is to create a dynamic risk model which is unbiased and therefore transparent.

The fourth area of research is to bring modern tools to the execution of projects such as block chain and smart contracts to improve transaction efficiency. Within this fourth area of research is how to anonymize the data to protect competition yet allow the community to see the overall impact on cost, schedule, quality, and safety.

About a year and half into the investigation we realized the building blocks for a new model were already available and proven and they just needed a new integrated assembly. The application of OS2 was not years in the future.

The research has been sponsored by a few companies such as ExxonMobil and other international oil companies, but as word got around about the research a surprising number of companies in divergent industries such as data centers, solar, and housing volunteered to help turn the research into a usable product. Experienced owners and senior executives of construction companies know from their experience that we are on the right track. There have been about 30 companies volunteering their time every two weeks for the last year and half to move this forward.

So you might ask how this new model for industrial projects fits into the Digital 360 Summit? Recall the second research area was early supplier engagement and the fourth area was to apply modern digital tools for execution efficiency. The use of common recognized data sets allows many more suppliers to efficiently apply their tools and work processes to service large EPC projects and to do so earlier in the project planning phase. This is particularly true for smaller contractors, suppliers and support industries such as insurers and banks

Highlights of OS2 related to data sets and digital platform

- Integration of existing data sets
    - OS2 then does not have to develop
    - Other industries can apply their work processes outside of OS2- OS2 does not have to build in those other industry work processes
    - OS2 is agnostic to the data sets – whatever industry is using, however must be internationally recognized and used

- Example of existing data sets
    - Banking for identifying community partners, and deeper understanding of their financial strength for dynamic risk analysis
    - Insurance to attack 3% waste in projects
    - Surety to attack 1% waste in projects

- Block Chain use
  - Capture transactions such as bidding, execution milestones, payments
  - Perform complex risk calculations anonymously within the block chain
  - Provides clean data for analysis and improvement

- Smart Contracts
  - Improve payment cycle to attack 9% carrying cost waste in projects
  - Automate the current paper based invoicing cycle for efficiency

- Platform to capture all aspects of OS2
  - Defining the common goals and behavioral guidelines for being in the community
  - Defining how companies join the community,
  - Forming neighborhoods to execute projects such as LNG projects, solar, data centers
  - Putting alternate execution plans together – 'bidding work'
  - Selection of best execution plan (risk evaluation)
  - Awarding Work – smart contracts
  - Immediate payment for Work – smart contracts
  - Continuous improvement
  - Functional Requirements Document underway to define building the platform.