Live Webinar

Digital Network Construction

A technology-enabled solution to the complexities of large-scale network deployment

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Today's Speakers

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Render Networks

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Render Networks

Network design and construction are ripe for innovation

Traditional network design and construction methods are not designed to efficiently deliver distributed, complex networks at the required velocity.

Despite the large volume of tasks required, traditional approaches rely heavily on manual processes, are disconnected between the office and field, and involve labor-intensive handoffs with little to no automation.

Render

Today's rollouts simply mean big numbers

Design	Scope	Award	Schedule	Stock	Install	Inspect	Report	Invoice	Pay	Turnover

100,000
HOMES
passed

80,000
ASSETS
turned over

80,000
TASKS
completed

480,000
OFFICE
transactions

240,000
FIELD
transactions

Fiber demand is at an all-time high

Large-scale fiber networks are needed to keep pace with **insatiable global demands** for bandwidth.

Today's networks are dramatically larger and more complex than traditional methods are designed to deliver.

150b
USD
of fiber needed by 2025 in response to economic opportunity and foundational rural broadband coverage*
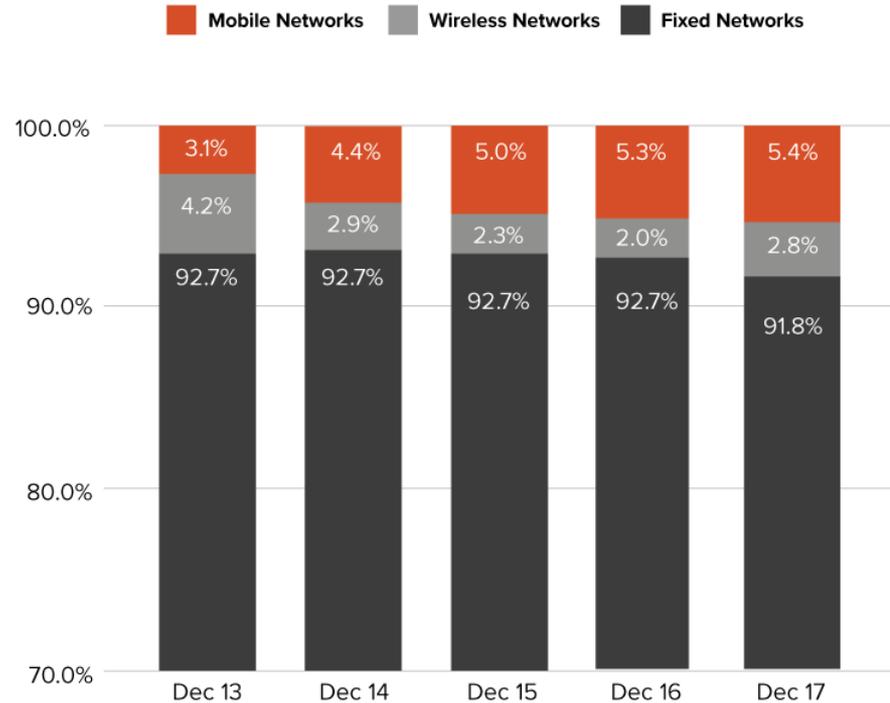
30-50
MILLION
new FTTX connections to be completed each year to 2022

5G - complementary and fiber rich

Data indicates that 5G is **complementary to and not competing with** existing fiber networks.

> **>90%**
> OF DATA
> in 2017 was downloaded
> on fixed networks

Mobile Networks **Wireless Networks** **Fixed Networks**

	Dec 13	Dec 14	Dec 15	Dec 16	Dec 17
Mobile Networks	3.1%	4.4%	5.0%	5.3%	5.4%
Wireless Networks	4.2%	2.9%	2.3%	2.0%	2.8%
Fixed Networks	92.7%	92.7%	92.7%	92.7%	91.8%

Bridging the rural divide with efficient deployment

23m

US PREMISES

without **high speed broadband**, forcing a renewed focus on bridging the rural digital divide

NRECA indicates **a lack of broadband access for 6.3 million electric co-op members** will result in:
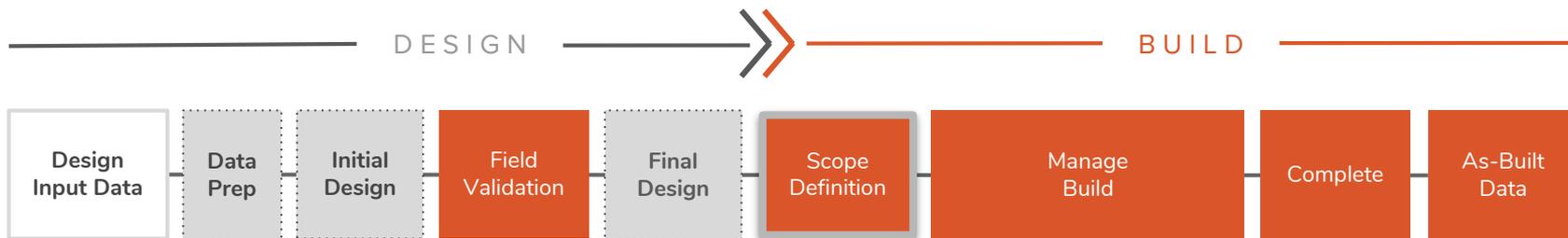
$68b

LOST ECONOMIC VALUE

New legislature: The Agriculture Improvement Act ("farm bill") and ReConnect, **a $600 million broadband loan and grant program** offers municipalities, rural electric co-ops and utilities and private companies access to this funding.

Network owners and builders will need to prove the efficiency and ROI of their deployment. Successful outcomes will ensure initial and ongoing fiber infrastructure funding.

Challenges at each stage of the project lifecycle

DESIGN ➤➤ BUILD

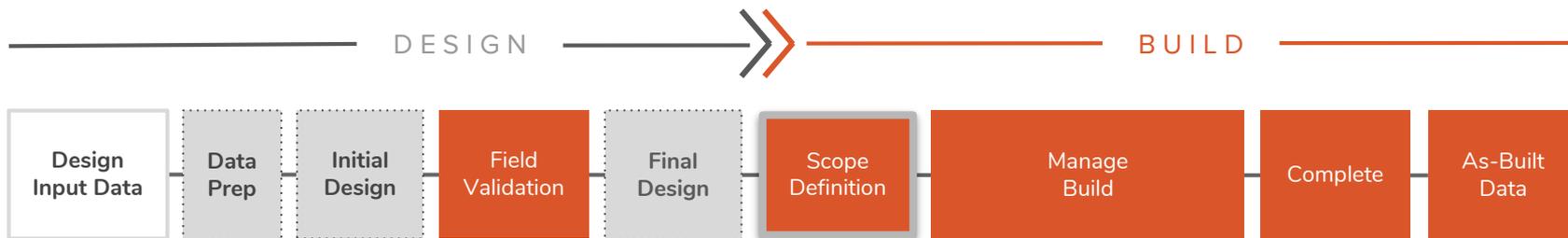| Design Input Data | Data Prep | Initial Design | Field Validation | Final Design | Scope Definition | Manage Build | Complete | As-Built Data |

Network Design

- Highly manual design process, unable to deliver efficient design capability at scale.

- Design often delays construction or sub-standard designs are pushed through to meet deadlines.

- Field validation for design rarely includes consideration of all constructability issues, resulting in another walkout by construction teams.

Challenges at each stage of the project lifecycle

DESIGN → BUILD

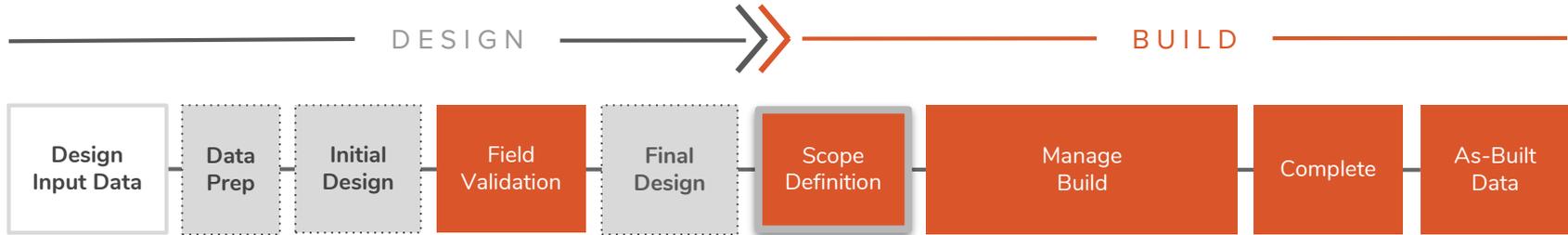| Design Input Data | Data Prep | Initial Design | Field Validation | Final Design | Scope Definition | Manage Build | Complete | As-Built Data |

Scope Definition

- Despite the level of detail contained in the design, construction scope is often defined poorly.

- Scope definition to date has not been done geospatially and hence is not utilizing all the data that is available.

- Current reliance on the capability and experience of the construction team to define clearly construction scope.

Challenges at each stage of the project lifecycle

D E S I G N → B U I L D

| Design Input Data | Data Prep | Initial Design | Field Validation | Final Design | Scope Definition | Manage Build | Complete | As-Built Data |

Network Construction

- Uses a 'civil construction project' approach to delivery. This is not suited to the geographically distributed, dependency-driven work using highly decentralized, mobile workforces.
- Despite the volumes involved, relies on manual processes and labour intensive handoffs
- Expected productivities are not achieved and the build simply takes longer and costs more than planned.

What's your biggest **network design or deployment pain point?**

1

Sub-optimal designs for constructability

2

Manual, paper-based processes and labour-intensive handoffs

3

High magnitude of administration effort

4

As-built data accuracy

5

Productivity across the lifecycle

An entirely new approach to network design & deployment

Three key principles of successful digital network design & construction:

1

Turn the design into work, and simply build the design

2

Project workflow digitization, automation and optimization

3

Real-time geospatial visibility for stakeholders

1. Turn the design into work, and simply build the design

Digital scope "Blueprint":
Sequenced and task-level

Combine rich, geospatial detail collected in the field with complex network design and construction management requirements. The output is thousands of digital labour and material scopes, all sequenced and delivered as manageable pieces of work.

Cloud-based GIS software with a mobile, connected workforce

Field teams are assigned specific tasks through a cloud-based mobile platform which not only specifies exactly what the field crew need to do, but captures accurate, consistent data, optimizing quality and minimizing rework.

2. Workflow digitization, automation & optimization

Daily, dependency-driven **resource optimization**

Greater utilization of resources by releasing and managing work based on sequenced, task-level work scope at the individual and team level. Stakeholders can dynamically reschedule work in real-time to the most efficient contractors.

Replace manual, paper-based processes

Eliminate the need for thousands of construction prints and the associated manual handoffs by providing robust data sets and a new level of visibility on geospatial maps - available on an iPad or web browser.

Capture accurate, as-built data as work is completed

Digital capture of specific completion or "as-built" information including work, material, jeopardy and digital red line data with seamless photos and attachment capabilities.

3. Real-time geospatial visibility for all stakeholders

Make better decisions with unified data

All project stakeholders require a common view to predict, plan, optimize and report progress. Identify where assets are, task completeness and where to allocate more resources - in a single, integrated view.

Unequalled productivity from the field to the office

With access to real-time data in the field, management in the office know exactly what work has been done in real-time, enabling them to dynamically monitor throughput and proactively keep teams moving.

Maximize investment and **integration** of existing project systems

Work management integration with existing GIS, master scheduling, work order, and finance systems is critical to removing the need for error-prone end-user spreadsheets, and delivering actionable insights.
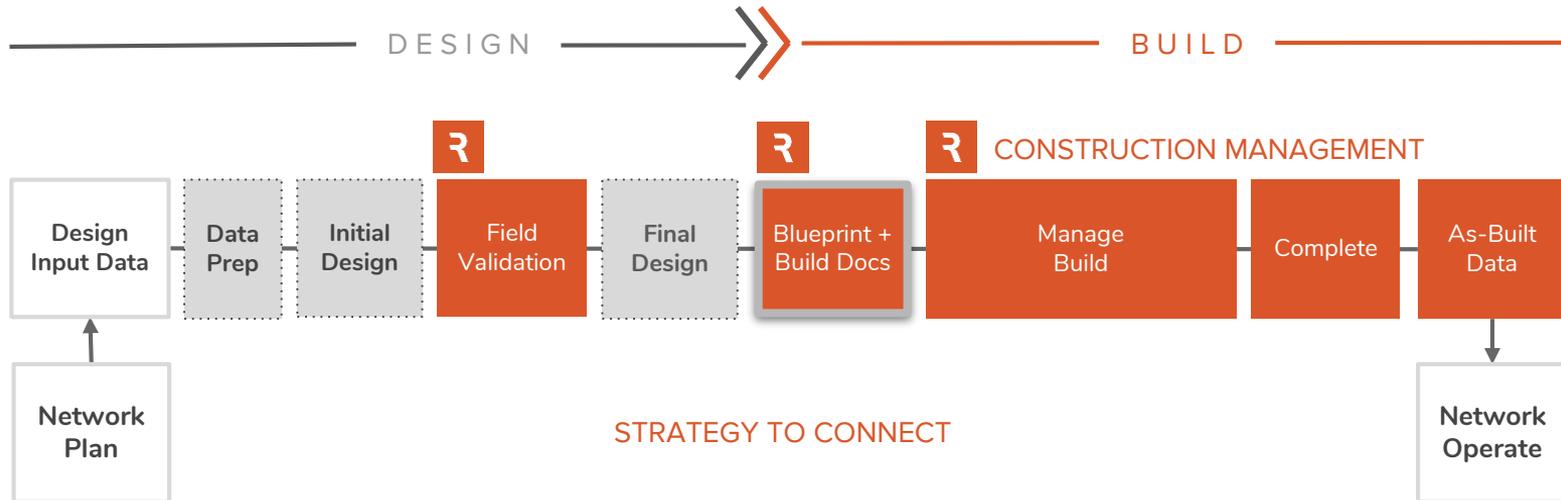
Halftime Q & A

Please submit your questions via the Chat window on the left of your screen.

Render's unique technology-enabled approach
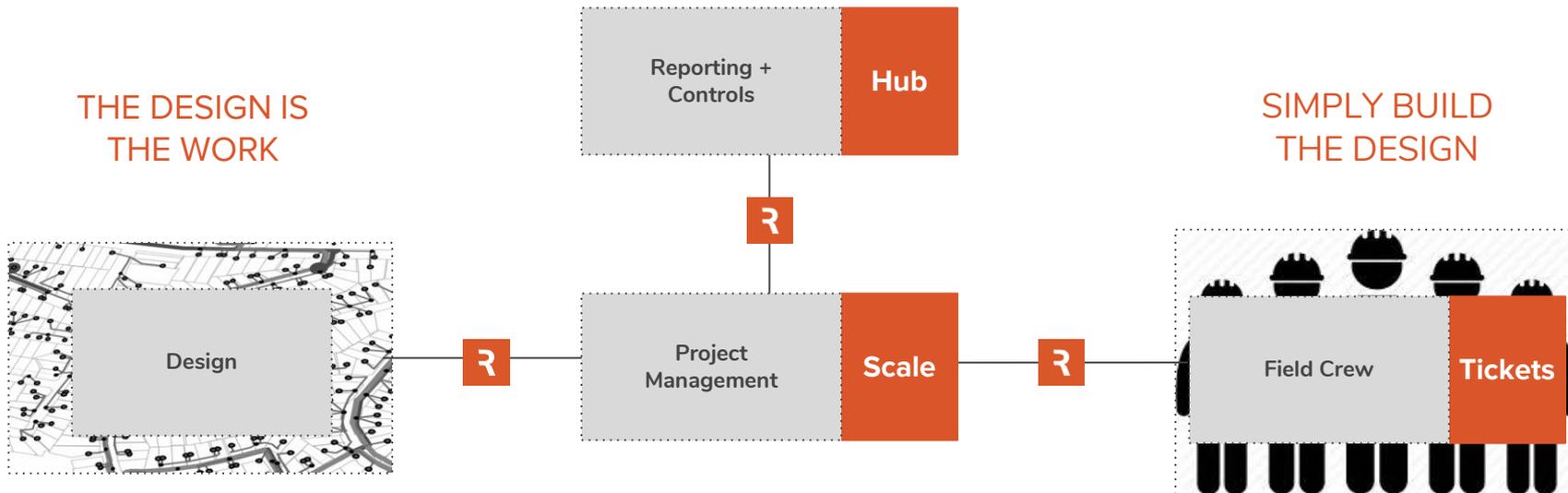
Render exists to **design and build networks better** with an **entirely new approach, utilizing today's technology, the power of automation and digital data flows.**

DESIGN   BUILD

CONSTRUCTION MANAGEMENT

| Design Input Data | Data Prep | Initial Design | Field Validation | Final Design | Blueprint + Build Docs | Manage Build | Complete | As-Built Data |

Network Plan

STRATEGY TO CONNECT

Network Operate

Render's unique technology-enabled approach

Turn the **design into work** and **simply build the design**, taking advantage of **today's technologies.**

THE DESIGN IS
THE WORK

SIMPLY BUILD
THE DESIGN

Reporting +
Controls

Hub

Design

Project
Management

Scale

Field Crew

Tickets

Case study: Craighead Electric Cooperative | USA

Craighead Electric Cooperative Corporation

The Render platform has enabled CECC to deliver:

55%
ahead of deployment schedule yet 12% under budget

Outside plant is being deployed
84%
faster than planned

75%
saving in forecasted resource spend

Craighead Electric Cooperative Corporation (CECC) initiated a $110 million project, in partnership with Irby Utilities, to bring much needed high-speed broadband to their 30,000 members across rural Arkansas.

With a robust network design and a distributed workforce needing to make informed decisions in the field, Render helped CECC take the design and flow it seamlessly through to project and task level management.

Render's core capabilities gave CECC the ability to make informed, data-driven decisions on the infrastructure & deployment whilst continuing to construct. The team no longer needed to devote heavy resource towards status updates and tracking progress, every stakeholder has access to real-time geospatial progress views delivering unequalled visibility.

CECC's goal in the first three years was to cover 50% of the 30,000 members which has been achieved in less than 18 months.

"With Render productivity is off the charts, data integrity is high, and construction costs are down, all without ever touching a piece of paper. Now I can't imagine trying to implement a large-scale utilities construction project without Render."

Jeremiah Sloan

Manager Fiber Assets | Craighead Electric Cooperative, Arkansas USA

Case study: Decon Technologies | Australia

Key project stats:

Render's technology has been adopted to deliver

23,000

nbn connections in Victoria.

Project Administration cost savings

64%

faster than planned

45%

In-field productivity improvements

Render formed a strategic partnership with Decon Technologies to ensure efficient delivery of the final stages of nbn Co.'s 8.1 million Australian premise Fiber To The Curb (FTTC) rollout.

With the complex FTTC deployment, the magnitude of the construction data to be managed increased significantly. To achieve the aggressive delivery timelines, Decon Technologies recognized that a digital network construction strategy was necessary to automate, optimize and efficiently deliver on targets and connections at scale.

Rollout progress is already demonstrating the power of the partnership to dramatically improve project velocity and outcomes including admin costs savings of over 60% to prior nbn Co. fibre projects in Australia.

Key Takeaways

1   The scale of today's rollouts mean big numbers and high complexity

2   Challenges are associated with building large networks...

3   Harness the power of a digital approach to deliver superior outcomes and strong ROI

4   Keep in mind the 3 key principles of successful digital network design and construction:

1. Turn the design into work, and simply build the design.
2. Digitize the project workflow, with a focus on optimization and automation.
3. Ensure real-time, geospatial visibility of project data for all stakeholders.

Thank you

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Q & A

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