# WELCOME TO IKE

IKE enables Crown Castle with both data and quality stardization across its entire footprint - pairing wireless and fiber applications.

10.5 Million	2 Million	75%
Photos	Poles	Reduce
of poles to date	in IKE Office	personnel requiring field visit
0	<b>2x Faster</b>	8x
Zero	Improve	Reduce
revisits to the pole	workflows from end to end	permit request rejections















# **WHY IKE MATTERS**

- + IKE is proven within Crown Castle through various Pilot Projects
- + IKE can scale across Crown Castle's entire Business Footprint
- + IKE will get Crown Castle to Market Faster, Minimizing Risk, and
- Increasing Revenue through the Standardization of Processes
- + IKE is a Long-Term Partner willing to build on our existing relationship









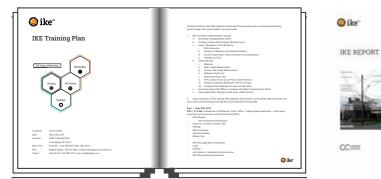




# **IKE ANALYZE**

IKE Training Plan





### IKE Digital Twin



# IKE Implementation Plan

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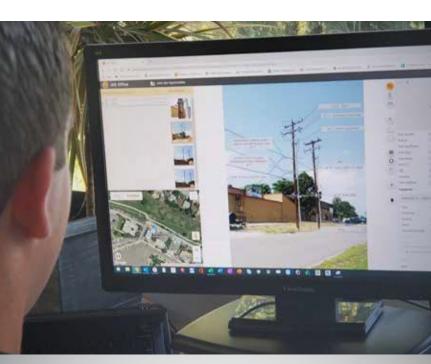
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# CONNECTING PEOPLE WHO CONNECT COMMUNITIES

At IKE, we exist to serve large communication infrastructure organizations so they can deploy networks faster and keep their customers entertained and informed.

### vision

To make IKE's pole people, process, and technology accessible to our partners as they connect the world - so they can serve their customers with maximum effectiveness.



# OPEN. FLEXIBLE. EXTENSIBLE.

From the beginning, the IKE Solution was designed to be future proof - based on our open and extensible architecture to suit the highest standards and processes for provisioning networks for high speed data. If it goes on a pole, we've planned for it.

### vision

To deliver in a way that removes complexity - in line with our core values; delivery with clarity, ingenuity, while being ourselves and never, ever, give up.





# RIGHT TIME. RIGHT PLACE.

Not because we say so, but because our customers tell us;

Our value is best expressed in how we operate - walking miles and miles in the field with you - going deep on pole analysis and certification. We go big on sharing our disciplines and practices.

### vision

To continue to imagine a future where our collective efforts directly bring about a better, more modern, more advanced tomorrow - Where innovation leapfrogs experimentation.



# **MEASURING VALUE**

Lean on IKE and our experience - leverage our IKE Analyze solution in delivering on our promise of the photo verifiable record. So you can deliver on the promise of your network and brand faster - gain market share - and do so in a way that minimizes rewalks, reduces permit acceptance times, and integrates engineering for paired wireless and fiber processes.

### vision

To light up the country in the delivery of power and the proliferation of high speed communications to every man, woman, and child.

# **OUR MOONSHOT**

Today the "IKE Record" has become a standardized record, and benchmark, for some of the largest utility companies on earth. From the beginning, our founders and engineers designed a framework and data structure to untethered pole data from the device. IKE data is collected on hardware and when enhanced by the IKE Cloud, is open and extensible to all major utility attachment application (PLA) architectures and make-ready applications. Untethered pole data is highly useful for planning, design, and site walk coordination. Further, our architecture makes way for what we call the "IKE Digital Twin" - a photo verifiable record of assets exactly as they exist in the field.

#### vision

To be an agent of change for our customers - to bring new thinking on how to measure and manage utility pole information, projects, and networks.

# **MADE FOR SMALL CELL + FIBER**

Every aspect of our approach to pole data collection through permitting has been meticulously designed to align with the highest standards and processes of provisioning high availability for high speed data. In a sense, we designed for small cell many years ago - our open and extensible architecture - wrapped within our solutions methodology are purposely future proof. The people, process, and technology make it so.

#### Trusted By



IKE is winning hearts and minds with the biggest names in the communications and utilities industry. Companies such as AT&T and Verizon have monumental targets to bring fiber to every human being in the United States.

### vision

It is our vision to unify the pole owners, the attachers, the regulators, the engineers and their field teams.



"Digital data collection and measurement means verification of results and no transcription errors"

**Brad Mayo** GIS Manager Henkels and McCoy

"We are excited about this exceptional product and are confident it will help our company grow and win."

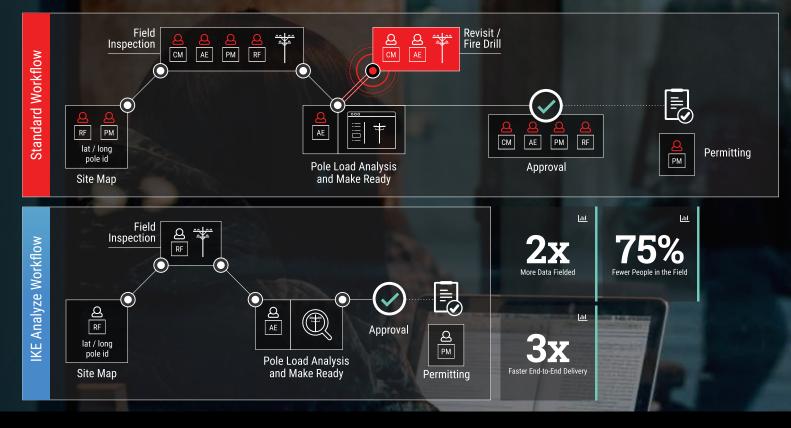
Adam W Engineer Largest US Communication Company

"The initial training was just right. IKE 4 was easy to learn and had a friendly user interface."

**Brian Christensen** Principal Engineer Horrocks Engineers

# TESTED

The National SC Construction E&O team has conducted extensive research on IKE and its technology platform. Pilots have been conducted and studied in several markets including Denver, Chicago, LA and Philadelphia. Cost benefit analysis has been conducted and the adoption of this technology by Crown SC is underway. Enhancements in workflow and field effectiveness have been observed and recorded.



### vision

To enhance workflows while not impeding on quality and consistency, enabling smoother processes and increased acceptance.



# **IKE METHOD**

Specific to Small Cell - Flexible to your people, process, technology, and culture.

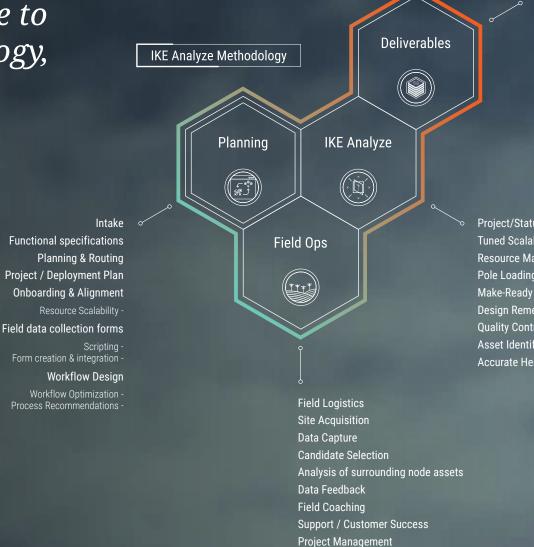
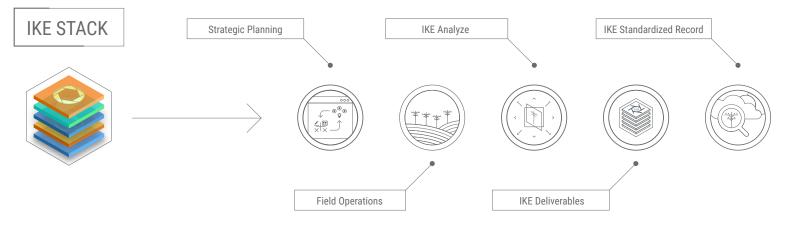


Photo Verifiable IKE Record
Excel, KML, CAD, GIS, JSON Outputs
JSON REST API
IKE Report
PLA Report (existing & proposed)
MRA Adjustments & Recommendations
Pass/Fail Maps
IKE Office Database
- Incl. Access to IKE Photos
Permitting

Project/Status Tracking Tuned Scalability Resource Management Pole Loading Analysis Make-Ready Assessments Design Remedies Quality Control (3 levels) Asset Identification Accurate Height of Attachments

# THE IKE SOLUTION



IKE's People, Process, and Technology, through the use of our IKE Analyze Solution, allows companies to scale efficiently while standardizing on quality and accuracy for all pole asset data shared across the organization.

The IKE Analyze solution delivers high value to customers through the integration of IKE field hardware through the entire workflow stack of data collection, analysis, PLA, and permitting.

The IKE Experience neither begins nor ends in the field. It is through the integrated IKE Solution where IKE Experts prescriptively map the deliverables and workflows to YOUR workflows so you can maximize the effectiveness of your teams; in the field, in the design team, in the back office, across the cloud into IKE Office/ IKE Analyze.

Our Solution is often recognized by our orange device, which was created to quickly, accurately, and safely capture pole data in the field. While our field tools have captured over 11 million records to date, and currently are enjoyed by many, it is by extending the data captured to our cloud solution that reveals a more dramatic value proposition.





# **BRASS TACKS**

## Prescriptive IKE Customer Experience

Our methodolgy maps to what we call the IKE Experience. Each facet connects with how we connect with YOU. When we engage in our pilots, we learn first hand which steps of our method are most crucial to bringing you the experience and outcomes for your business. We bring with us tools to share our deliverables and key outputs to map you most effectively into the process.

		Doc Required	Doc Not Provided				Doc Required	Doc Not Provided Doc Done				Doc Required Doc Not Provided	Doc Done			Doc Required Doc Not Provided	Doc Done
Awareness & Engagement		/ ojul	lofo /		Planning and Alignment		Info /	Info/		Success in the Field		Info /	lufo/	Successful Receipt of Deliverables		Info /	/ofnl
Awareness & Engagement	Owner	1		) D	Onboarding & Deployment	Owner	∎_+	è, è	_ ا	Field Success / Value	Owner	<b>1</b>	×	Analyze Delivery Value	Öwner	Ē_+ Ē	×₿∕©
Marketing execution; brand, lead gen, content, 'must use and do' processes	Marketing				Project checklist for Deployment, including Task Order review	Deployment	Θ	~	/	Project Ramp-up Pack	Support	Ø	$\checkmark$	Data Organization & Collaboration w/ Client	IKE A	Ð	$\sim$
Sales Step Model // See	Sales	Ð			RACI Chart	Sales	Θ	~	/	Field Training Provided	Support	Ø	$\checkmark$	Analyst team feedback loop / Field Data QA / 3 Levels	IKE A	Ø	$\checkmark$
Paid Pilot (if required by customer)	Solution Engineering				Customer Received: Engagement Pack**	Deployment	Ø	~	/	Field Coaching / receipt of Analyze team feedback loop on field data quality	Support	Ø	$\checkmark$	ikeA Optimization / Maximize Transactions Per Analyst	IKE A	Ø	$\checkmark$
Security Audit	Operations	Ð	\ \	/	Setup for scripting, forms, file outputs, data organization, number of units etc	Support	Θ	~	/	Pro-Active and Regular Performance & Efficiency Monitoring	Support	Ø	$\checkmark$	Photo Verifiable IKE Records	IKE A	Ø	$\checkmark$
MSA Draft	Operations	Ð		/	Consultative services available for workflow optimization	Support	Ø	~	/	Customer reporting	Sales / Account Management	Ø	$\checkmark$	IKE Report / PLA Report / Pass / Fail Maps	IKE A	Ø	$\checkmark$
Insurances	Operations	Ð	\ \	/	Joint-use outreach initiated	Sales	Ð	~	/	Customer/Account Mgmt	Sales / Account Management	Ø	$\checkmark$	Permitting	IKE A	Ø	$\checkmark$
Requirements Discovery for Task Order Completion	Solution Engineering	Ð			Staffing/Capacity/Run Rates established	Support	Θ			Asset management system / Optimization of IKE assets	Support	Ø		Customer project status calls [weekly]	IKE A / Account Management	Ø	$\checkmark$
Project Success Definition - Signed by Customer	Solution Engineering	Ð		/	Process test	Deployment	Ø	~	/	Customer contract close out	Support	Ø	$\checkmark$	Development additional contracts via account development processes	Sales / Account Management	Ø	$\checkmark$
Contracts Review and Signing	CEO	Ð	\ \	/	Deployment Success Certification - signed by customer	Deployment	Ð	~	/					Provision of 90 day forecast, by account	Sales / Account Management	Ø	$\checkmark$
Marketing execution; brand, lead gen, content, 'must use and do' processes	Marketing	Ð			Account plan updated in CRM	Sales	Ð	~	/					Customer contract close out / final report	Account Management	Ø	$\checkmark$
Key Output         Signed Contracts           KPI         Revenue and # of Poles Contracted	Notes:			Total	Key Output         Customer is onboarded and confirms that they are running in line with Task Order           KPI         Deployment score - as scored by customer	Notes:			Total	Key Output         Poles Collected () required rate           KPI         Pole collection rates: efficiency and quality	Notes:			Key Output         Analysed Poles Delivered @ required rate           KPI         Long term contract demand / relationship	Notes:		Total

# **IKE ANALYZE**

The cost for IKE Hardware includes the device (including molded plastic carrying case, tripod and case and the first-year license fee). The yearly license fee for the IKE Office Cloud Solution can be renewed annually on a per-device basis which includes software updates, tech support, and the Crown internal usage/ management of the IKE Office and its deliverables.

The management of IKE devices, licenses and requests for purchases currently will be managed by the SC National Construction Support office. Their responsibility will include:

- + Tracking the number of national devices and licensing renewals for deployed units.
- + Coordination of device and software updates.
- + Pricing and agreements for area requested IKE surveyors.
- + Pricing and agreements for area requests for full service IKE Office Deliverables (see Back Office deliverables below)
- IKE Services and Deliverables

IKE Analyze is currently offered in three service levels:

- + HOA (Heights of Attachment)
- + PLA (Pole Load Analysis)
- + MRA (Make-Ready Assessment)

#### IKE Analyze "Prescribed" Deliverables

#### Include:

- + Route Planning
- + IKE Photo Pole Tagging (marking all attachments and wires)
- + Pole Loading Analysis (PLAs): SPIDACalc, Pole Foreman and O-Calc (stamped internally by Crown E&O)
- + 1A & 2C survey reports (stamped internal by Crown E&O)
- + Make-Ready
- + Scripting and populating regional Utility Attachment Applications
- + Existing sites condition drawings
- + IKE Report for each site

Note – These deliverables can also eventually be created by Crown internally if the proper expertise is obtained and staffed and are billable under the <u>self perform</u> model within the IKE Analyze Solution.



# **CROWN CASTLE INQUIRIES**

Requests for purchases of devices can be submitted to: Briar Barry at Briar.Barry@Crowncastle.com , 724-416-9619. Please provide shipping address and contact information with order. SC Construction Support will request a specific invoice from IKE to initiate the Crown internal PO process. PO's will be the responsibility of requesting office. National pricing for IKE devices will reduce as purchased quantities increase.

For the time being, the E&O SC National Construction Support team will be responsible for negotiating and establishing pricing for IKE services and any change order requests submitted after work has begun. It is the intention of E&O to turn these responsibilities over to Supply Chain and/or the Regional Support Service teams once process is mature.

Requests for IKE additional Full-Service offerings, including IKE surveyors, can be submitted to Robbie Heaps at Robert.Heaps@Crowncastle.com, 724-416-9887.



Malcolm Taylor

Director of Sales, Communications malcolm.taylor@ikegps.com 770-329-4345



### Surveyors

IKE is capable of providing surveyors nation-wide for first time site walks and audit purposes. IKE has established a network of surveyors throughout the country, that are proficient in survey work, the IKE device, outside plant networks, route planning and conducting efficient site walks. Depending on the maturity of the surveyor, a Crown Construction Manager may need to accompany the surveyor to address constructability at given sites. Depending on if a site is new or existing, density of sites, and terrain, surveyors can collect on average 20 to 60 sites a day.

Currently pricing for combined services (surveyor and back office support) is dependent on project scope and the activities to be performed. Current pricing can be discussed with your account manager at IKE.

### PE E&O Stamping Program

E&O is happy to report the launching of the Small Cell PE Stamping program. Often both Pole Loading reports and 1A & 2C survey reports require a PE stamp. Currently, Crown has licenses to PE stamp for a majority of all states in the US. Depending on total work load, E&O hopes to begin stamping these deliverables on an ongoing basis. The program is currently being piloted for the TMUS Tranche 4 projects in Philadelphia. E&O is gearing up to stamp a combined total of over 4000 PLA's and 1As.

### Deliverables Crown Will Need to Produce for IKE

In order for the IKE technology to be fully utilized, local teams must obtain the following deliverables:

- + Utility wire tension catalogues for proposed attachment Utility Company
- + Non-Disclosure Agreements (NDAs) from Utility companies for use of catalogues in Pole Loading software
- + List of Crown proposed primary equipment to be deployed including estimated total weight for all attachments (Antenna, Shroud, Power Unit)
- + Identification of Pole Loading software utilized/accepted by Utility company
- + Make Ready Assumptions including requirements for future 5G fit considerations



### How to Obtain a Utility Catalogue

A utility catalogue is a collection of data that accurately identifies wire types, weights, thicknesses, and wire tension for a given utility. This data is needed and is uploaded into the IKE Office for the chosen Pole Loading software to accurately analyze the load on a given pole. Span widths, wire types, and tensions are needed for all wires leading from a candidate pole to all adjacent poles connected to it.

Some utilities, such as the utilities located in California, are required to share this information. Others have offered the information but may need a nondisclosure (NDA) to release it. Others may refuse to provide the information.

Your regional Utilities Relation Managers have been brought up to speed and will take the lead in requesting this information. Sparked by the Philadelphia IKE site walks, the Crown Legal Department is working on a universal NDA that could be adapted for a given Utility company. If utility catalogues are not able to be produced, the URM's and the National Utility team, will help to establish more conservative standard tables that can be applied. The emphasis to the field is to work hard to obtain these accurate catalogues from the utilities in an effort to decrease the likely hood of a pole failure and increase the overall acceptance (based on accuracy) of the pole loading analysis submitted to the Utility company.

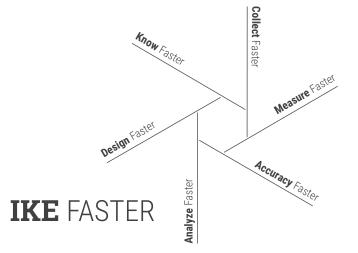
CC CROWN CASTLE + Wike



### In what ways can the IKE technology be utilized by Crown?

The IKE devices can be used for several purposes:

- + Site walks: Site walks can be conducted by trained Crown personnel, conducted by hired IKE surveyors, or conducted by hired A&E firms utilizing the IKE technology.
- + Audits: There has been a continued need for Crown to conduct audits of assets already constructed. For example, audits can be conducted to settle 3000+ node acceptance discrepancies that currently remain in our internal systems. In addition, audits can be conducted to accurately answer if a given site is ready for a 5G installation, as well as properly capturing vertical field dimensions of existing sites for accuracy for future build estimates.
- + CM Quality Review: Construction Managers can utilize the IKE device to capture newly built sites (after the closeout package has been submitted to the customer) to check that vertical height attachments are code compliant and match attachment permits.
- + Operations: Operations can help to perform ongoing audits of assets by capturing changes to the site pole on a quarterly basis.





### Working with our A&E Firms

With Crown's adoption of the IKE technology platform and its associated deliverables, comes some changes with our A&E firms. The good news for Crown is that the IKE technology will enable Crown to sustainably cut costs on deliverables normally contracted to our A&E partners. The downside is solely for our A&E's, as there is the need to adjust to a reduction of scope that the firms normally are contracted to perform, and how the A&Es, going forward will utilize the collected IKE field data to populate their construction and permit drawings. In a controlled manner, the A&E's will be introduced to the data and will eventually be required to utilize that data for their deliverables. IKE field data can be captured by either Crown Castle members, a 3rd party surveyor, or the A&E's themselves if they wish to purchase the technology. In all occurrences, the captured data will remain in the possession of Crown Castle.

The good news is that there are a number of firms today that use the IKE technology for their outside plant survey work. In addition, the list of utility companies that require or accept the IKE data is growing. The argument is strong for the adoption of this technology.

### How to Approach A&E Vendors

Your Support Services teams can help with the introduction of the technology to A&E vendors. The East Area Support Services team recently issued a revised Fixed Pricing RFP to six major A&E firms servicing Philadelphia. The RFP introduced the technology and requested revised pricing for deliverables using the IKE Office data. The A&E firms certainly had questions and concerns, but in the end, five of the six firms agreed to the use of the data and NOT to change the current fixed unit pricing in place for the region.

A sample RFP and notes can be shared by the East Area Support Services team. Combining efforts will help to speed along other regional efforts and to improve the overall deployment of this process with our A&E firms.

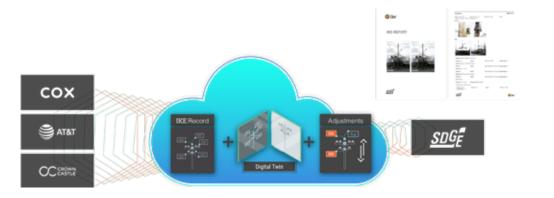
CHANGE is hard, and this transition will not happen overnight. Area teams are encouraged not to use CHANGE as an indicator of lost time. The Philadelphia RFP was conducted and completed in less than a 2-week period.



### IKE Fast Lane – Utility Attachment Applications

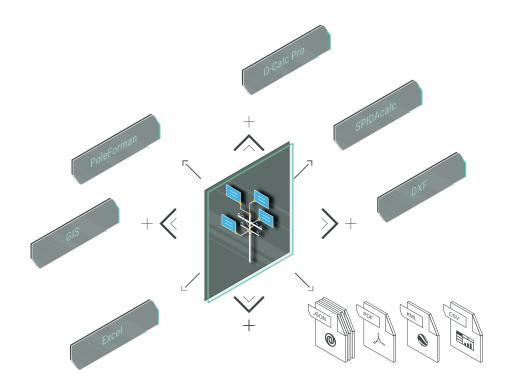
There are certain utility power companies, such as San Diego Power, that accept the IKE data and are requesting the field data be populated into their applications using the IKE technology. In addition, there are other utility companies that own the IKE device and are using the technology to capture their own field data. IKE continues to make concerted efforts to improve and build new relations with utility companies across the US, with an emphasis on the top 20 MSAs. IKE has provided Crown with their ongoing strategic plan to connect with the Utility companies, along with what stage they feel they are at in building the relationship. IKE calls this initiative, the IKE Fast Lane program. The overall goal of this program is for a given local utility company, with limited hesitation, trust the application data and submittals that are being submitted to them, using the IKE technology. The goal is to help the utilities, (whom are suffering from staff issues and a substantial rise in attachment applications) reduce, if not eliminate, the need to visit the field to verify that the data that is being submitted on any given application, is correct.

Despite the new FCC language regarding limits on applications time frames to 45 days or less, utilities are finding it hard, if not impossible, to comply without additional resources. Reducing the need to visit these sites and trusting the data will greatly reduce the need for additional labor and greatly improve the overall time for application cook times. Crown's Utility Relations Managers are engaged with IKE in these efforts and look to partner with IKE where they can to implement the IKE Fast Lane with a given utility.



### Integration of IKE data into Crown Systems

The National SC Construction Support team is working with Crown IT to integrate the data from the IKE Cloud into Crown's appropriate system including the Pole Admin Utility (PAU) and the SC Asset Management System (AMS) and the PMT. IKE already offers a number of export options of their data and efforts to integrate that data with Crown systems will not be a huge undertaking. IT Discovery and plans for integration will begin in the month of August 2019.





### Training

The IKE technology is easy to learn. IKE offers a number of training resources such as paper presentations and videos. IKE offers both WebEx training and onsite training course for its users. WebEx introductions can also be performed for Crown's A&E vendors and/or for Carrier leads interested in using the captured data for site selection options or for RF design work.

The SC National Construction Support team is also heavily engaged with launching the IKE program and have available personnel to train on the device, as well as the IKE Office.

Areas are asked to contact Briar Barry, National SC Construction Support, for help with training needs and coordination of training visit by IKE personnel.

For further information, please visit:

http://ikesupport.ikegps.com/



#### **Andrew Boone**

Deployment Manager andrew.boone@ikegps.com 678-675-2416

**Reference Materials:** 

 $\underline{\downarrow}$  IKE Field Training Guide

 $\underline{\downarrow}$  IKE Field Tips



### Dedicated to Serving Communications and Wireless Infrastructure Companies.

Who are focused on:

- + Faster network deployments.
- + Improving network and data quality.
- + Keeping crews out of harm's way.
- + Meeting the demands of regulators.





# PAGES FOR LATER



# CONNECTING PEOPLE WHO CONNECT COMMUNITIES

At IKE, we exist to serve large communication infrastructure organizations to keep their customers entertained, informed, and safe.

### vision

To make accessible our people, process, and technology to our partners as they connect our modern world - so they may connect with maximum effectiveness.



# **CONNECTING PEOPLE** WHO CONNECT COMMUNITIES

At IKE, we exist to serve large communication infrastructure organizations to keep their customers entertained, informed, and safe.

vision

To make accessible our people, process, and technology to our partners as they connect our modern world - so they may connect with maximum effectiveness.

# The Method

IKE has formulated a specific methodology as it relates to the business of pole data acquisition and analysis. This methodology is adaptable, customizable, prescriptive, and scalable to meet the needs of our (Crown Castle) people, processes, technology, and business objectives.

As the IKE Method is prescriptive, this document reflects attributes in the context of "workflows" as they are specifically focused on the work Crown Castle and IKE have identified.





Data Intake Functional specifications Planning & Routing Process Recommendations Project / Deployment Plan Onboarding & Alignment

+ Resource Scalability

Field data collection forms

+ Scripting -

+ Form creation & integration - Workflow Optimization

#### Data Intake:

Descriptive text goes here. Not to exceed 250 characters. To magnis vendi dem voluptatusam dios volo doles exerunt dolupti officae pores as volorei untempos reicia si omnis autem nis doles eta mosam officimusa verchil in porit odit pelit hit, accabo.

#### **Functional Specifications:**

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#### Planning & Routing

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#### **Process Recommendations**

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 $\odot$  — IKE Analyze

○ — Deliverables





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#### Project / Deployment Plan

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#### **Onboarding & Alignment**

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#### Resource Scalability

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#### Field data collection forms



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 $\odot$  — IKE Analyze





Data Intake Functional specifications Planning & Routing Process Recommendations Project / Deployment Plan Onboarding & Alignment

+ Resource Scalability Field data collection forms

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#### Scripting -

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#### Form creation & integration -

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#### Workflow Optimization

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 $\odot$  — Field Ops

○ — IKE Analyze





Project Management Field Logistics Site Acquisition Data Capture Candidate Selection Analysis of surrounding node assets Data Feedback Field Coaching Support / Customer Success

#### **Project Management**

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#### Field Logistics

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#### Site Acquisition

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#### Data Capture

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#### Candidate Selection





○ — IKE Analyze



Project Management Field Logistics Site Acquisition Data Capture Candidate Selection Analysis of surrounding node assets Data Feedback Field Coaching Support / Customer Success

#### Analysis of surrounding node assets

Descriptive text goes here. Not to exceed 250 characters. To magnis vendi dem voluptatusam dios volo doles exerunt dolupti officae pores as volorei untempos reicia si omnis autem nis doles eta mosam officimusa verchil in porit odit pelit hit, accabo.

#### Data Feedback

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#### Field Coaching

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#### Support / Customer Success

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○ — IKE Analyze





Project/Status Tracking Tuned Scalability Resource Management Pole Loading Analysis Make-Ready Assessments Design Remedies Quality Control (3 levels) Asset Identification Accurate Height of Attachments

#### Project/Status Tracking

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#### Tuned Scalability

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#### **Resource Management**

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#### Pole Loading Analysis

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#### Make-Ready Assessments

○ — Planning

 $\odot$  — Field Ops





Project/Status Tracking Tuned Scalability Resource Management Pole Loading Analysis Make-Ready Assessments Design Remedies Quality Control (3 levels) Asset Identification Accurate Height of Attachments

#### **Design Remedies**

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#### Quality Control (3 levels)

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#### Asset Identification

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#### Accurate Height of Attachments

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 $\odot$  — Field Ops







Photo Verifiable IKE Record Excel, KML, CAD, GIS, JSON Outputs JSON REST API IKE Report MRA Adjustments & Recommendations PLA Report (existing & proposed) Pass/Fail Maps IKE Office Database

+ - Incl. Access to IKE Photos

Permitting

#### Photo Verifiable IKE Record

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#### Excel, KML, CAD, GIS, JSON Outputs

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#### JSON REST API

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#### **IKE Report**

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#### MRA Adjustments & Recommendations

 $\circ$  — Planning

 $\odot$  — Field Ops

○ — IKE Analyze





Photo Verifiable IKE Record Excel, KML, CAD, GIS, JSON Outputs JSON REST API IKE Report MRA Adjustments & Recommendations PLA Report (existing & proposed) Pass/Fail Maps IKE Office Database

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#### PLA Report (existing & proposed)

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#### Pass/Fail Maps

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#### IKE Office Database

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#### Permitting

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