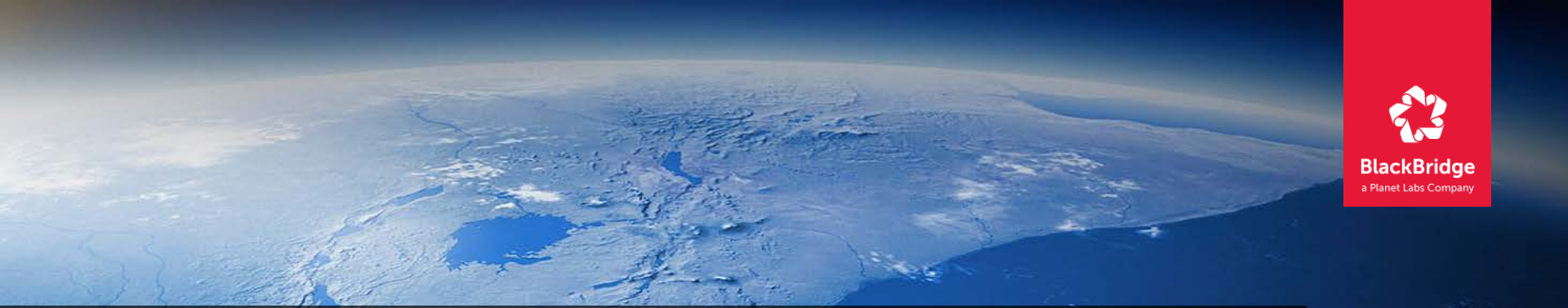

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GROßFLÄCHIGE UND HOCHFREQUENTE BEOBACHTUNG VON AGRARFLÄCHEN DURCH OPTISCHE SATELLITEN (RAPIDEYE, LANDSAT 8, SENTINEL-2)

- Karsten Frotscher | Produktmanager Landwirtschaft

A Couple Of Words About The Latest Headlines…

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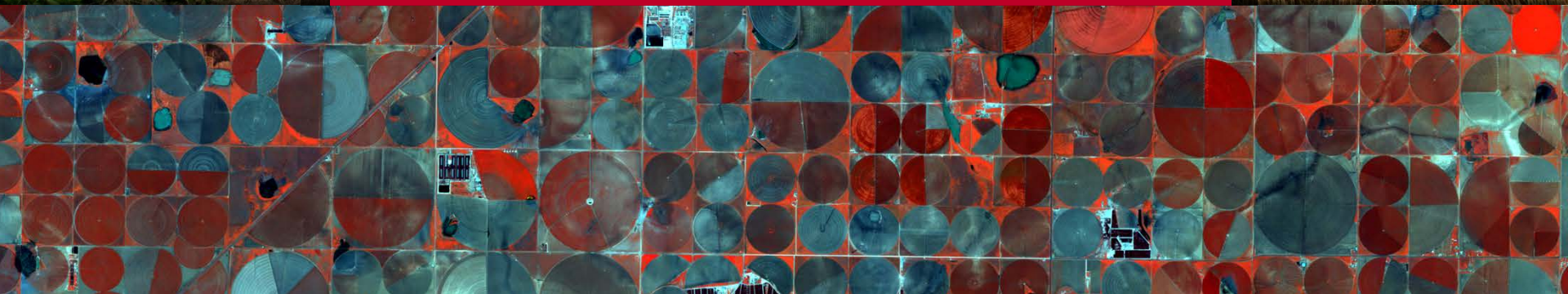
BlackBridge is now part of the Planet Labs family

The Challenges



When You Need to Manage Fields You Want…

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Information about your fields several times during the growing season

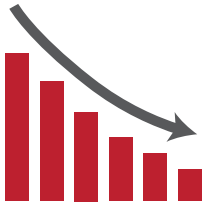
Enough in-field detail

Cost-effectiveness

A reliable source of information available over large areas

So That at The End of The Day You Can...

- Help your customers make better decisions for better field management



Optimize input costs

Increase yield

Farm sustainability

Getting a Regular Picture of Your Fields

Enough In-field Detail to Monitor Variability

But When You Need to Cover Large Areas…

Can Satellite Imagery Take Care of All That?

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Broad coverage

In-season revisit

In-field detail

Cost-effectiveness

The Monitoring Solution

Monitoring Program Features

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BROAD COVERAGE

+ Major agricultural areas worldwide

IN-SEASON REVISIT

+ Daily acquisition within AOI
+ Typically one image per month

IN-FIELD DETAIL

+ 5 meter ortho
+ 5 spectral bands
+ High positional accuracy

QUICK & EASY DATA MANAGEMENT

+ API
+ GUI
+ Colocation

MULTI-YEAR ARCHIVE

+ 7 years of archived RapidEye imagery
+ Co-registered Landsat 8 imagery
+ Sentinel-2 imagery

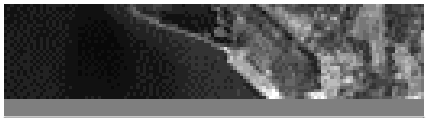
Imagery Products

RAPIDEYE ORTHO PRODUCT 3A

+ 5 m pixel size
+ 5 spectral bands
+ 25 x 25 km tile size
+ **GeoTiff Download**

LANDSAT-8 L1T CO-REGISTERED

+ 30 m MS Bands
+ 15 m Pan Bands
+ TIRS
+ In Program AOIs
+ Co-registered w/ RE
+ **GeoTiff Download**



SENTINEL-2

RapidEye & Landsat 8 (& Sentinel-2)

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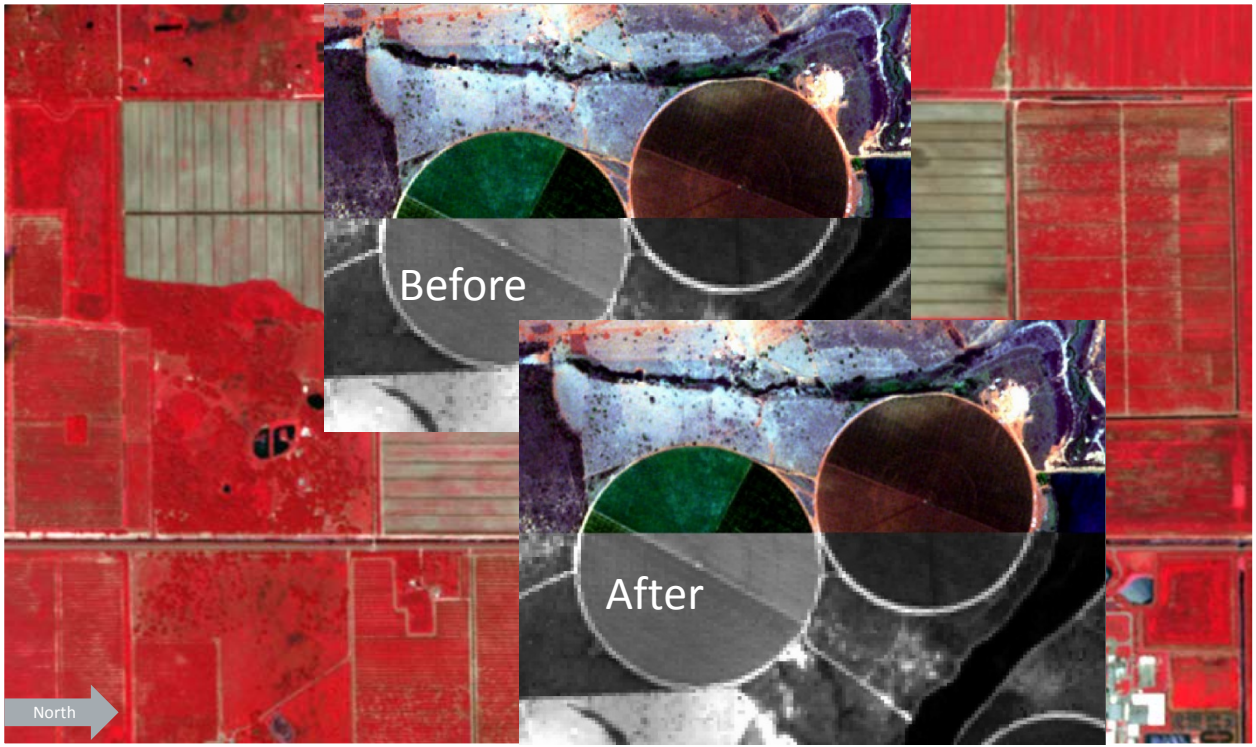
Increased Reliability

Improved Inter-Usability



RapidEye L3A
NIR, Red, Green
2013-08-12
5 meter
16 bit unsigned
BlackBridge

Landsat 8 L1T
NIR, Red, Green
2013-08-11
30 meter
16 bit unsigned
USGS

Image Acquisitions

North America Agriculture
15-05-2015 to 15-09-2015

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Broad Coverage - North America Example

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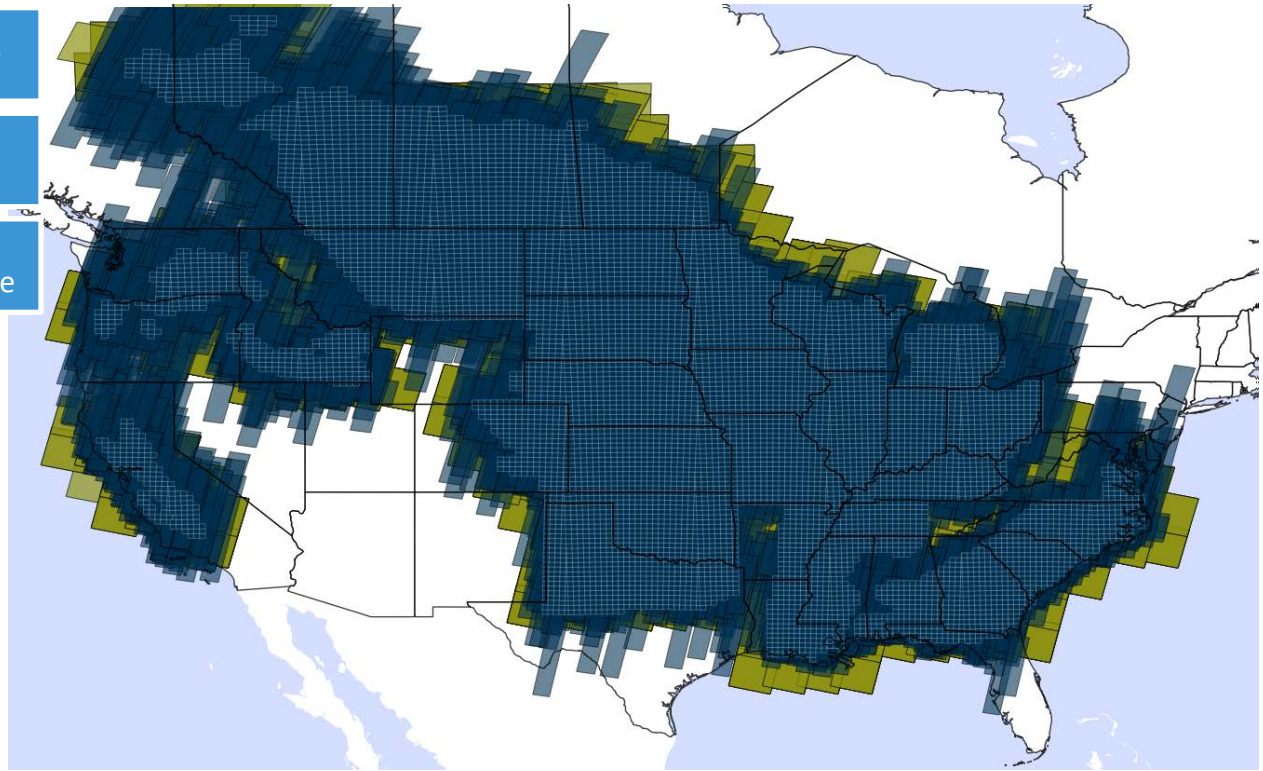
Scalable

Reliable

Easily Accessible



Daily coverage

Month 1 coverage

+ Month 2 coverage

+ Month 3 coverage

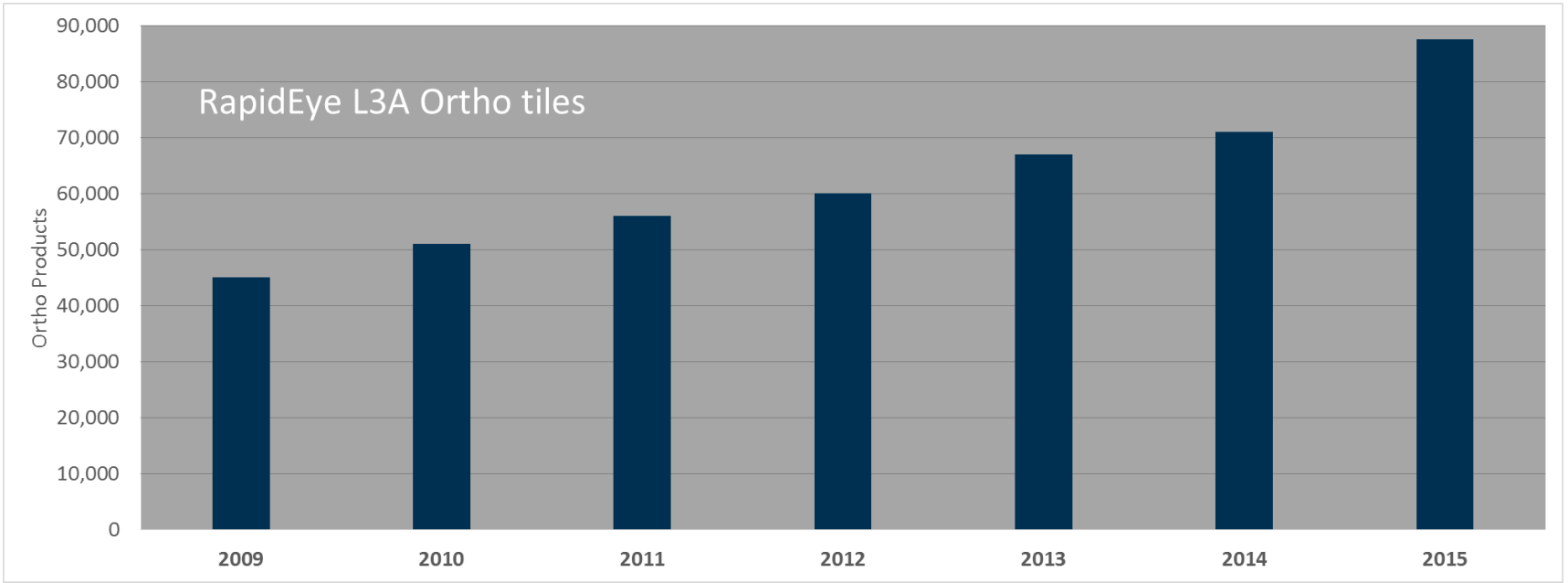
+ Month 4 coverage

RapidEye Image Takes

RapidEye Ortho Products

Landsat 8 Scenes

Multi-Year Archive - North America Example



Archive Period: 15th of May to 15th of September for each year

In-Season Revisit

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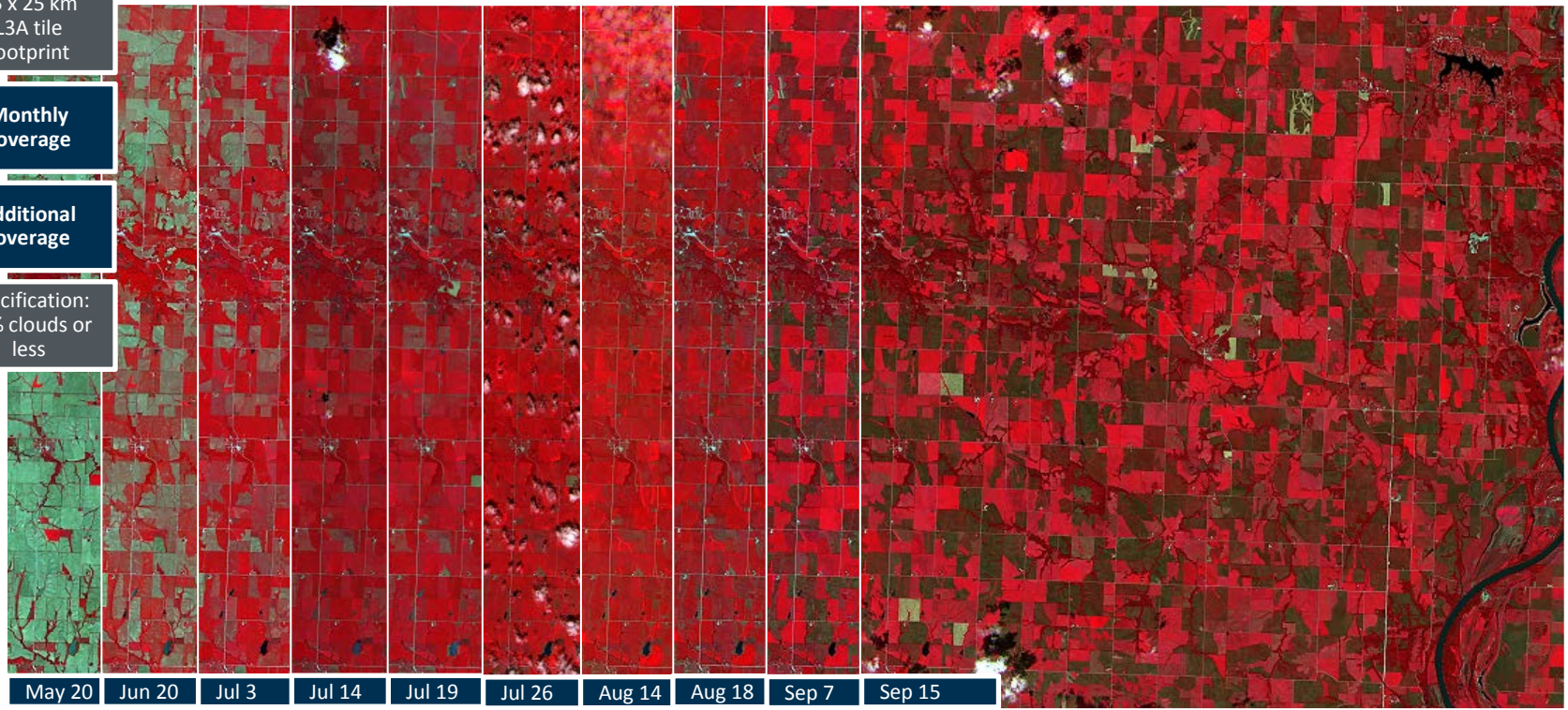
25 x 25 km L3A tile footprint

Monthly coverage

Additional coverage

Specification: 20% clouds or less



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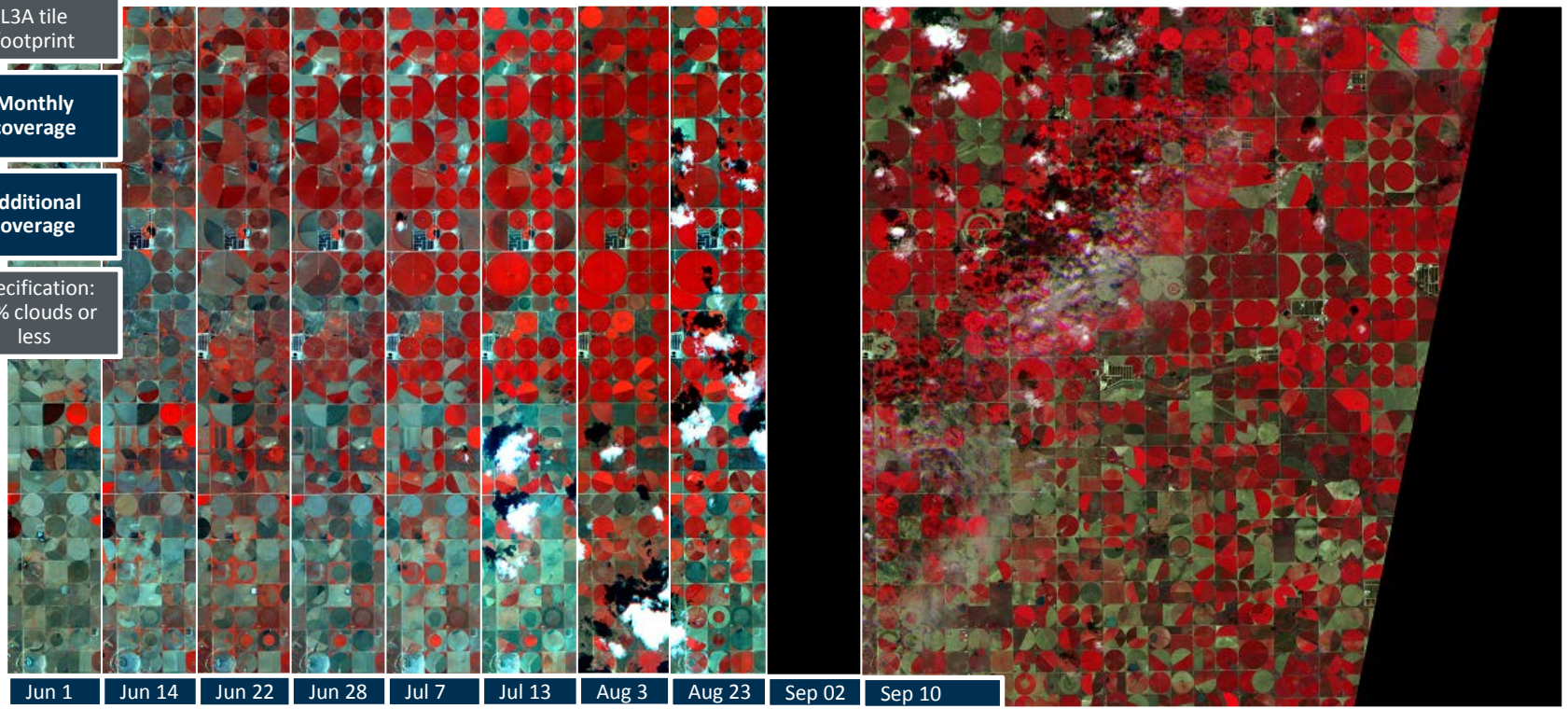
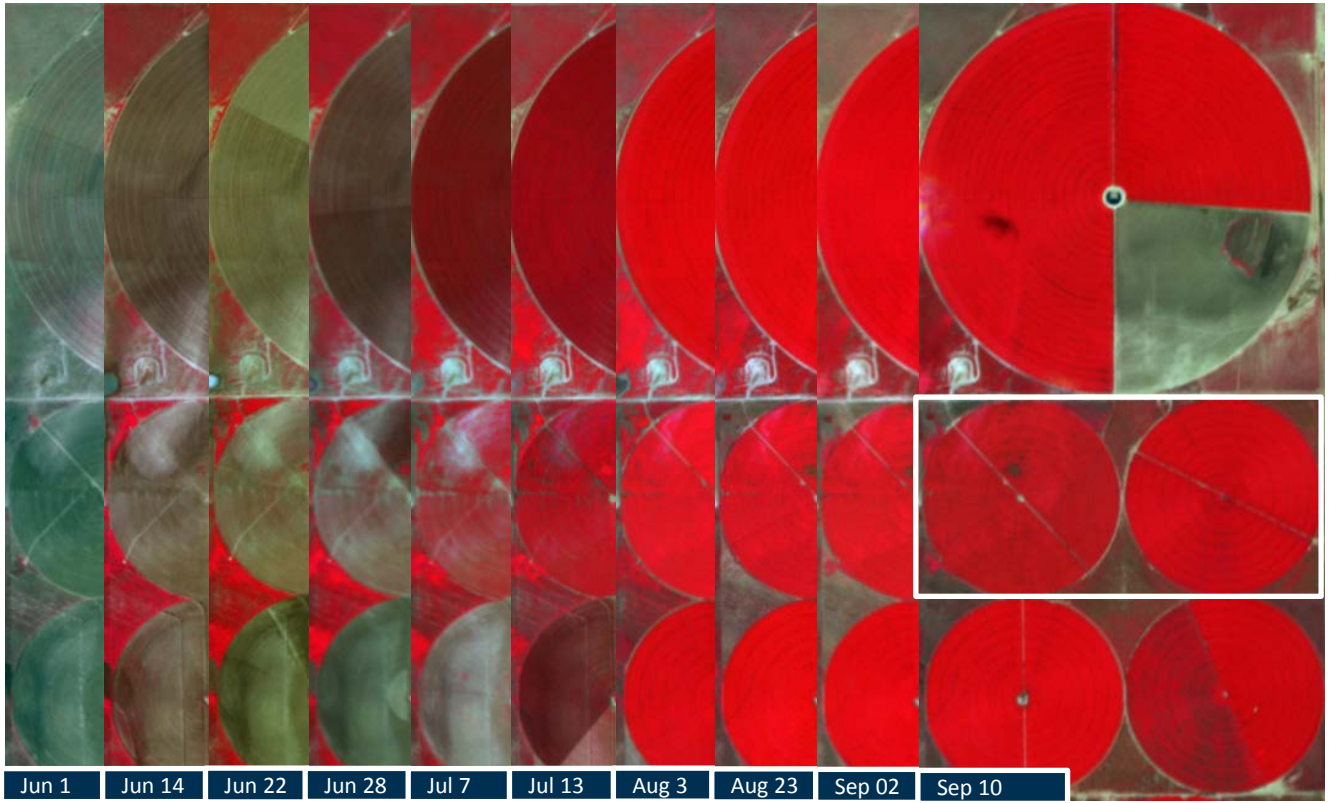


In-Field Detail - Color-Infrared (CIR)



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CIR Imagery

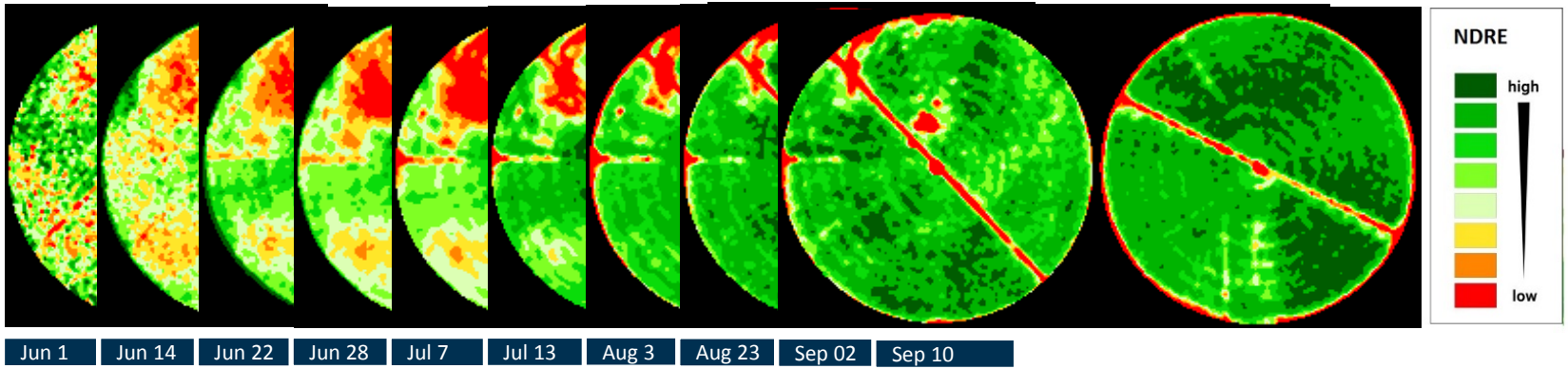
Scout for Problems

Analyze Growth Stage

Monitor Crop Health

Write Prescriptions

Use Case – Vegetation Index



Use Case – Vegetation Index

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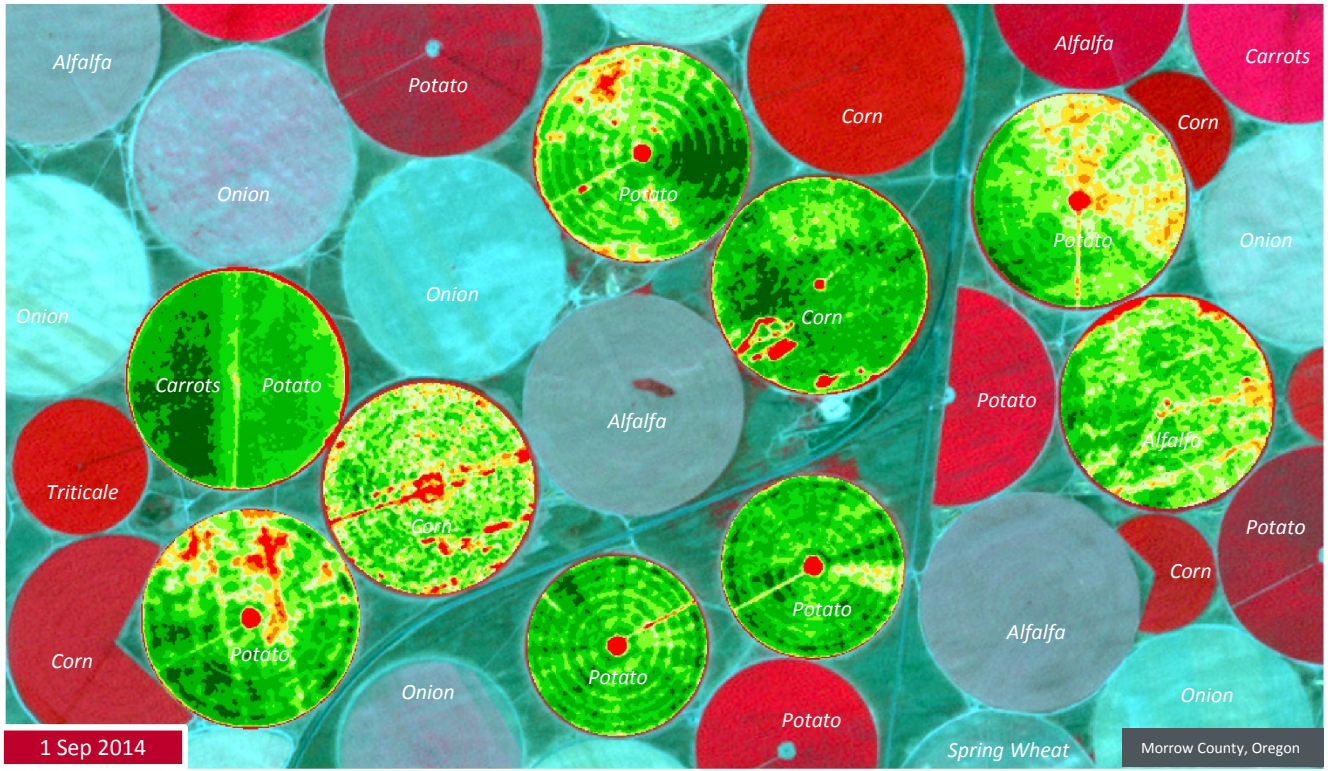
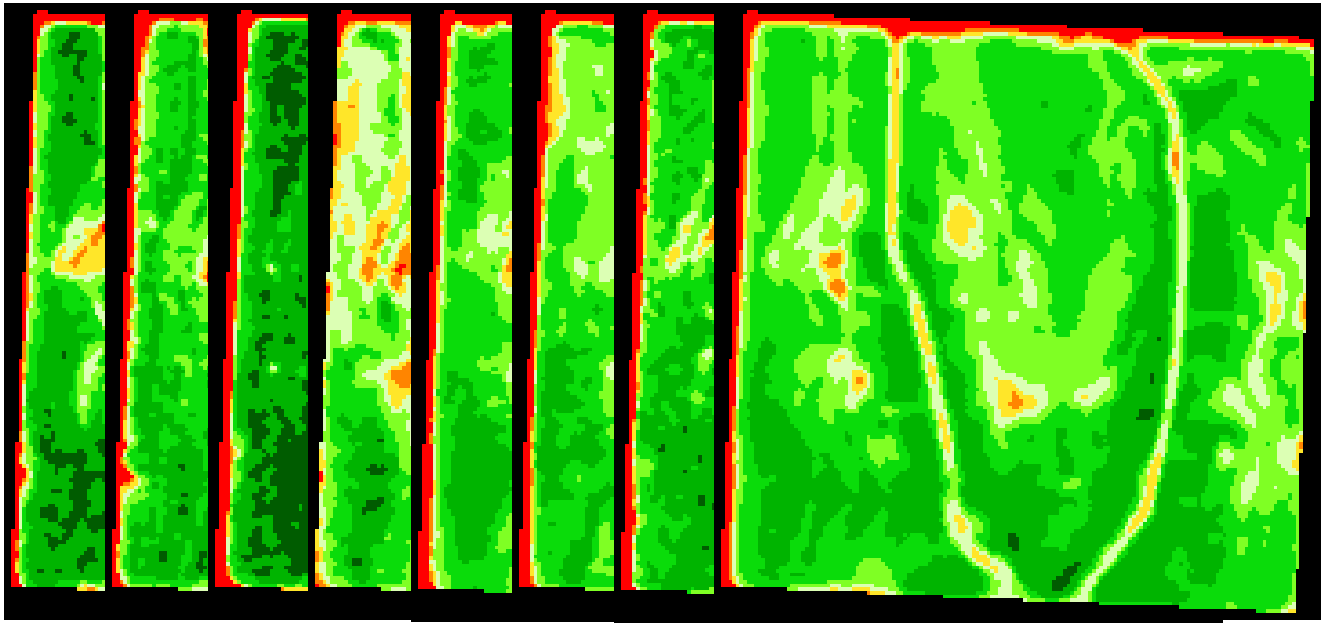
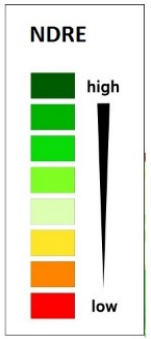
- CIR Imagery
- Vegetation Index
- Scout for Problems
- Analyze Growth Stage
- Monitor Crop Health
- Write Prescriptions



Chlorophyll [relative]
high
low

Use Case – Persistent Productivity Zones





In-Field Status and Variability

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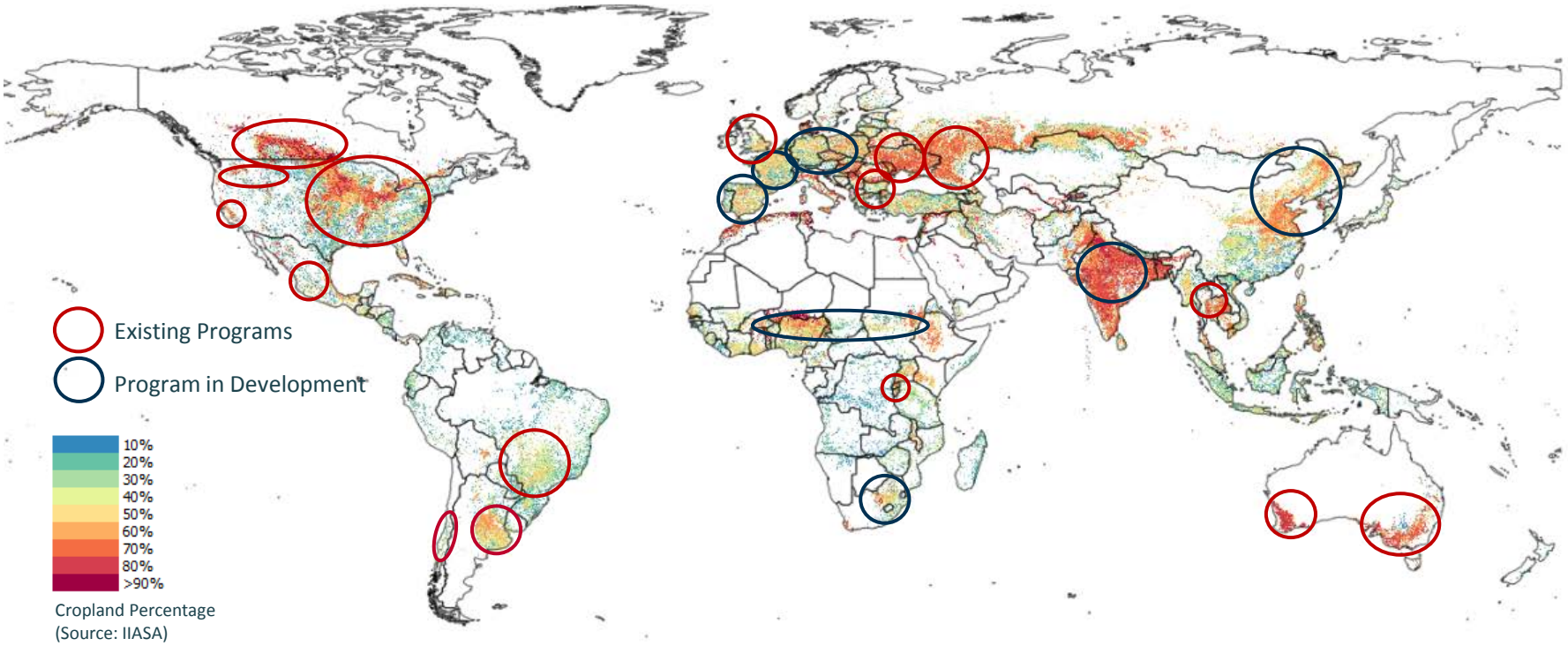
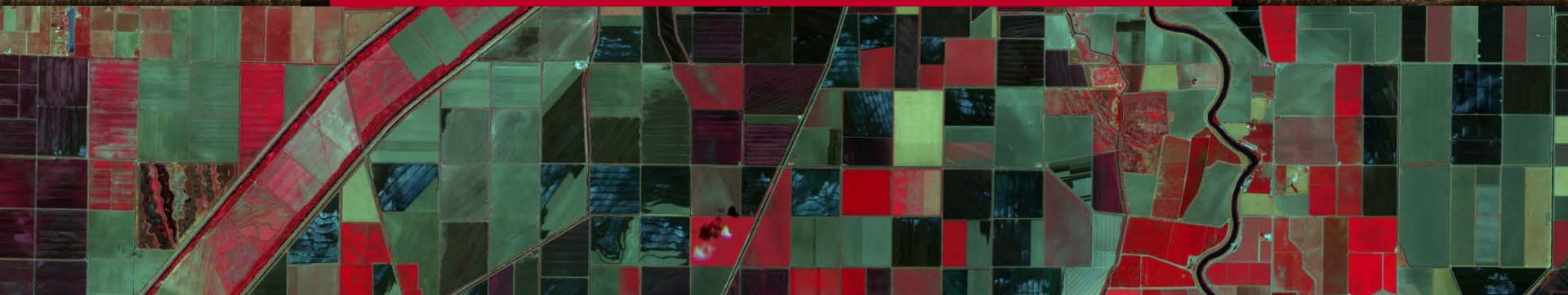
Imagery is used to delineate management zones and for decision support:

- Variable rate fertilization application
- Detection of water issues and irrigation needs
- Variable rate application of pesticides
- Damage assessment

Monitoring Programs Worldwide



Quick and Easy Data Management



Easy Imagery Access

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Imagery is cloud hosted and accessible via:

1. Dedicated web app for users
2. REST API for programmatic access

- Search all imagery from *YOUR* subscription
- Access all from *YOUR* Subscription

Easy Imagery Access

REST API

Programmatic query and retrieval of imagery

Full metadata search

To download a zipped image product directly:

```
>>> import requests
>>> import cgi
>>> s = requests.Session()
>>> r =
s.get('https://geocloud.blackbridge.com/gcapi/getProduct?imgtype=re_3a&catid=1
streaming=True')
>>> if r.status_code == 200:
...     if r.headers.get('content-type') == 'application/zip':
...         _,params = cgi.parse_header(r.headers.get('content-disposition'))
...         filename = params.get('filename')
...         with open(filename, 'wb') as f:
...             f.write(r.content)
...     else:
...         print r.text
... else:
...     print r.text
```

Query:

https://eyefind-ag.blackbridge.com/rest/v1?
toiStart=2012-07-01&
toiEnd=2012-08-01&
aoiType=pol&
country=United States&
admin=South Dakota&
cc=5&
imgType=itt

Ideal for custom workflows and automated processes.

Cloud-Based Co-location

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Deploy your workflows on VMs next to the data:

- Instant data – no download latency
- Access to scalable compute resources

  - **More than 3 times faster archive queries**
  - **More than 20 times faster image downloads**

RapidEye Data Distribution

VS

Main Benefits

BlackBridge
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Large-area collection

Multiple in-season coverage

Field-level detail

Quick and easy access

Cost-effectiveness

Danke !

karsten.frotscher@blackbridge.com