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STRETCHING THE LIMITS

http://www.brueckner.com/
http://tiny.cc/brueckner

# About

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# We Build the Largest Lines in the Industry

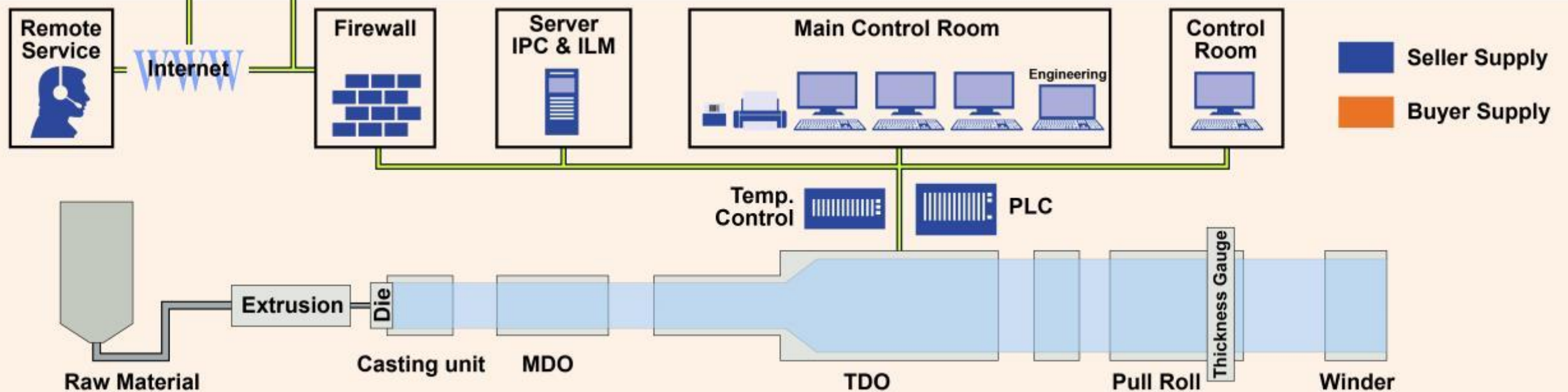## BOPP 10.4m (35ft) – winder

# Are You in Packaging Films?

# How we deploy our products

# Goal: System Architecture

Now:

- Store Sensor / Scanner Data
- Write
 > 3'000 updates / sec
- Scalability
- Low System-Complexity

Later:

- Intelligent Line
- Management Cockpits
- Smart Recipes

# Challenges

- OEM (Licensing, Support)
- Customer has no IT-Administration or low IT-KnowHow
- Low-Cost Server Infrastructure
- Highly scalable Server infrastructure
- Bad network connection
- Many power shutdowns
- Production 24/7
    - High availability
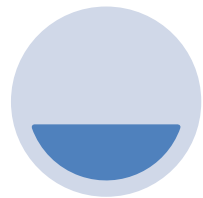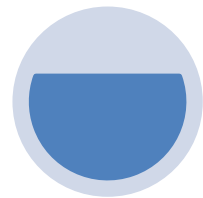    - Complex system update

# Reasons for choosing MongoDB
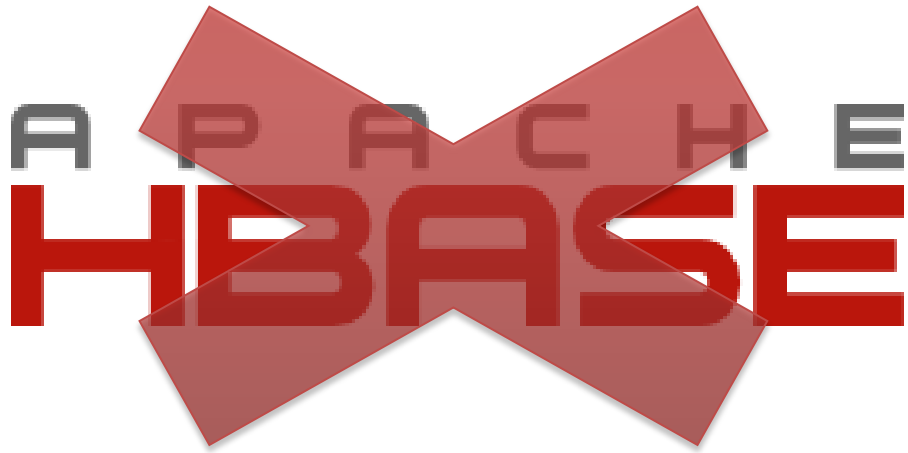


- Schema free
- Ease and speed of development
- Ease of operations
- Realtime analysis of streaming data
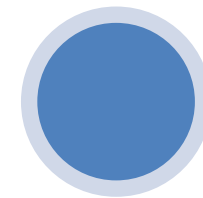- Possibility to add Hadoop for heavier Analytics later

# Bucket Schema

Have one bucket per sensor

Fill up with values till it's full

Use next bucket

# Bucket Schema

## Performance

- Pre-allocate space with empty documents for upcoming data count -> in-place updates
- Different bucket sizes for different sensors
- Still good for range based queries
- Have to keep counter in app to determine bucket state
- **Good fit for sparse data**

# Lessons learned

- Schema design matters
- Increase performance:
  - In-Memory caching
  - Concurrency
  - Queue
  - Core-Sharding

- Flexible and scalable system
  - We can build a system with low complexity for simple use cases
  - We can provide a system for „bigger" use cases by increasing complexity

# Where we are now

- PoC and its results are approved by the management
- Workout / Design the UI/UX
- Develop the software system

- Ship prototypes to some sites
- Explore and develop analytic-algorithms
- Fieldtest for our software system with MongoDB
- First machine with this solution to be deployed in 2016