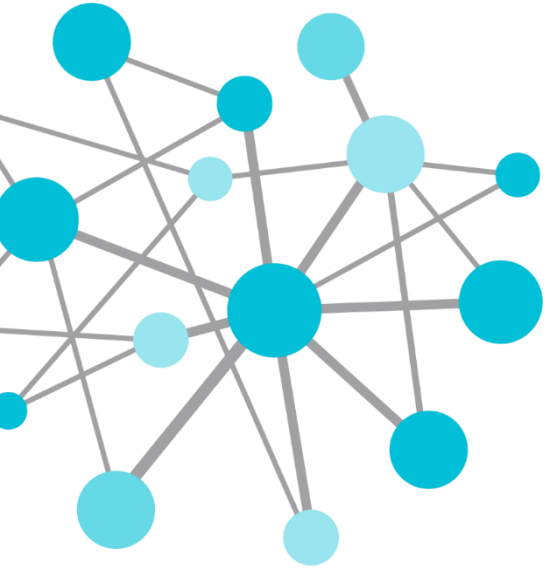


Rapid Insights with Data Analytics – Georgia Pacific Experiments

Georgia-Pacific

Presented by **Steve Savoie, Georgia Pacific**

Gopal GopalKrishnan, P.E., OSIsoft

Agenda

- About Georgia Pacific
- Review Experiments
- Review Conclusions
- Discuss Future Plans

About Georgia-Pacific

Georgia-Pacific is one of the world's leading makers of tissue, pulp, paper, packaging, building products and related chemicals.

If you're a consumer, you may recognize our household brands, such as Brawny® paper towels, Quilted Northern® bath tissue and Dixie® cups and tableware.

If you're in the construction business, you're probably familiar with our engineered lumber products, gypsum panels and other quality building materials.

Even if you work in aerospace, mining or facilities management, Georgia-Pacific products may be part of your day.

Koch Companies

Flint Hills Resources | INVISTA | Koch Chemical Technology Group | Koch Ag & Energy Solutions
Koch Industries | Koch Minerals | Koch Pipeline | Koch Supply and Trading
Matador Cattle Company | Moles | Georgia Pacific

Georgia Pacific

Away from home | Building and Construction | Cellulose | Chemicals | Nonwovens
Packaging | Paper | Consumer Products

PI System at GP

- Customer about 15 years, some facilities longer
- PI is used across multiple divisions and facilities
- 500,000+ PI tags

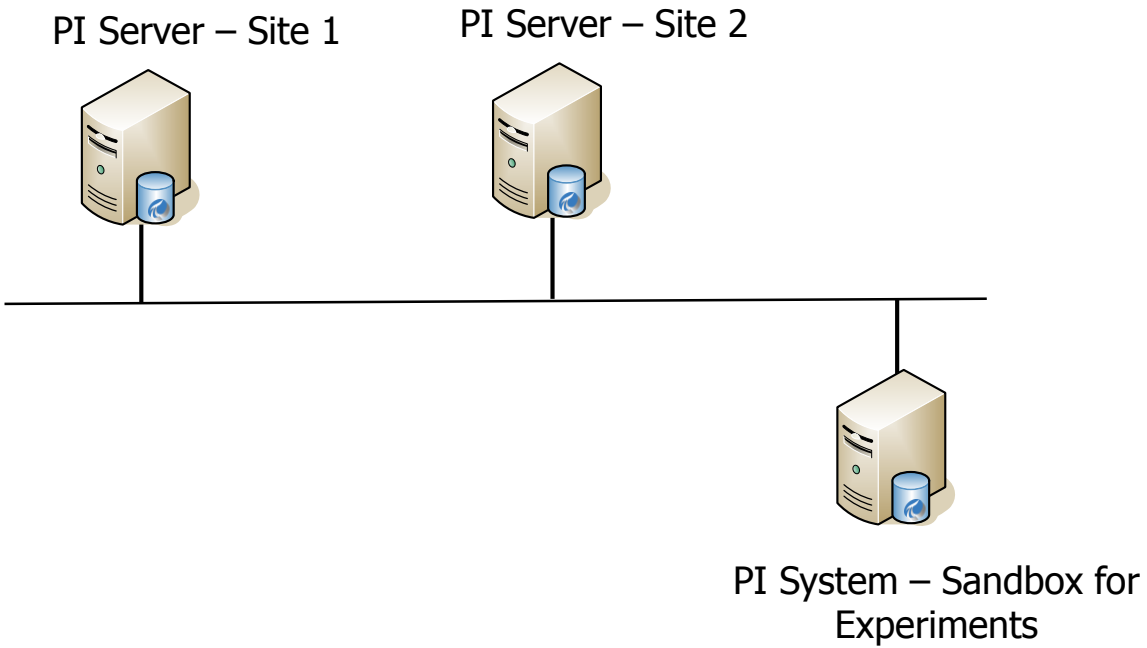
Two “Experiments”

- Chemical Usage
- Sheet Breaks

- Goals
  - Present data faster and in easier to read format (Rapid Insights)
  - Learn OSI and Microsoft tools (AF, OLEDB Ent, PowerPivot, etc.)
  - Potentially improve process

In the slides that follow, production data has been altered to maintain confidentiality; however the methodology used for the analytics still apply…

PI System Sandbox

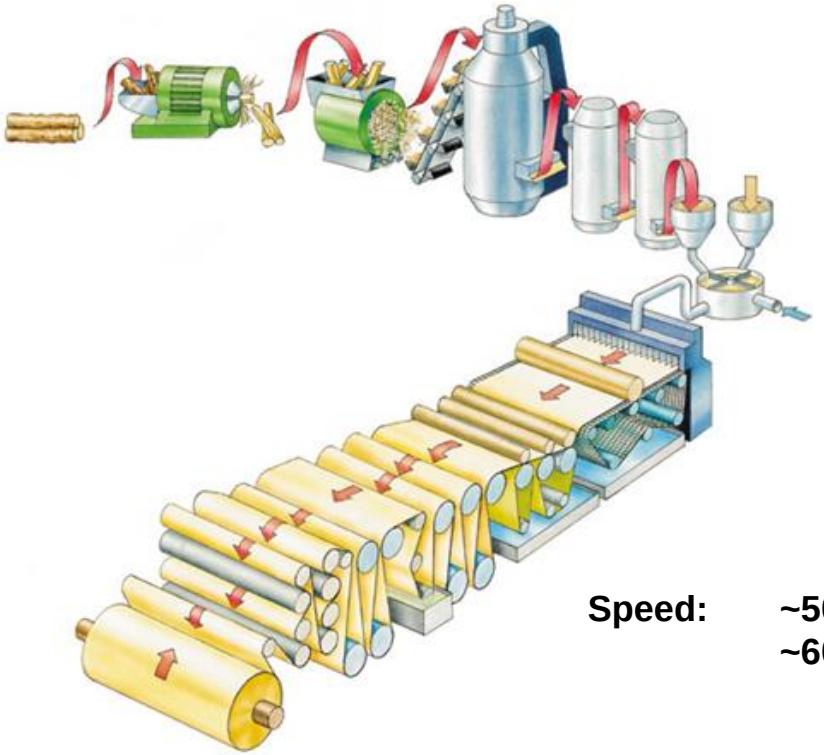


Win 2008 R2 or Win 2012 (80GB disk and 16GB RAM)

Office Excel 64 bit - 2010 or 2013
PowerPivot or PowerView

PI Server (vCampus license is OK)
SQL 2012 (SQL Express is OK)
AF 2014 R2 (Server and Client)
EFGen
PI SMT
PI Builder
PI OLEDB Enterprise
PI DataLink 2014
PI ProcessBook 2014
PI Coresight 2014

Experiment #1 – Chemical Usage



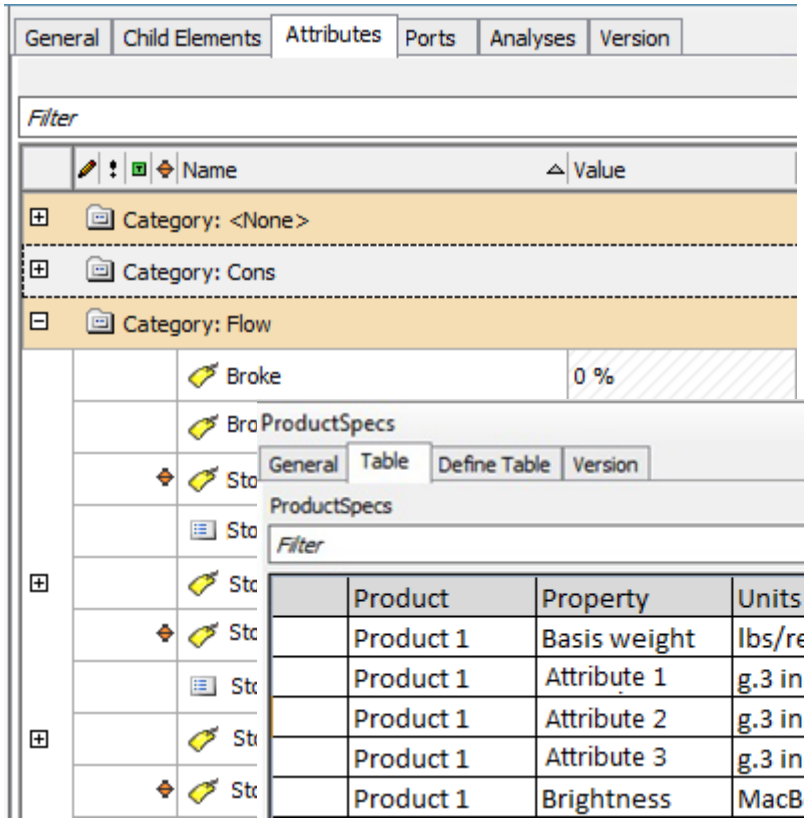
- Totally Chlorine Free (TCF)
- Elemental Chlorine Free (ECF)
- Chlorine Bleaching
- Oxygen/Ozone Bleached
- Unbleached
- Broke
- Chemical additives

Speed: **~5000 linear feet/min**
~60 mph

From Tag Data to Production Records

- Multiple production lines (paper machines)
- Multiple production runs (grade-runs) on each machine
- Thousands of tags
- Lab data
- Product recipe and specs

AF Model – Chemical Usage



ProductSpecs

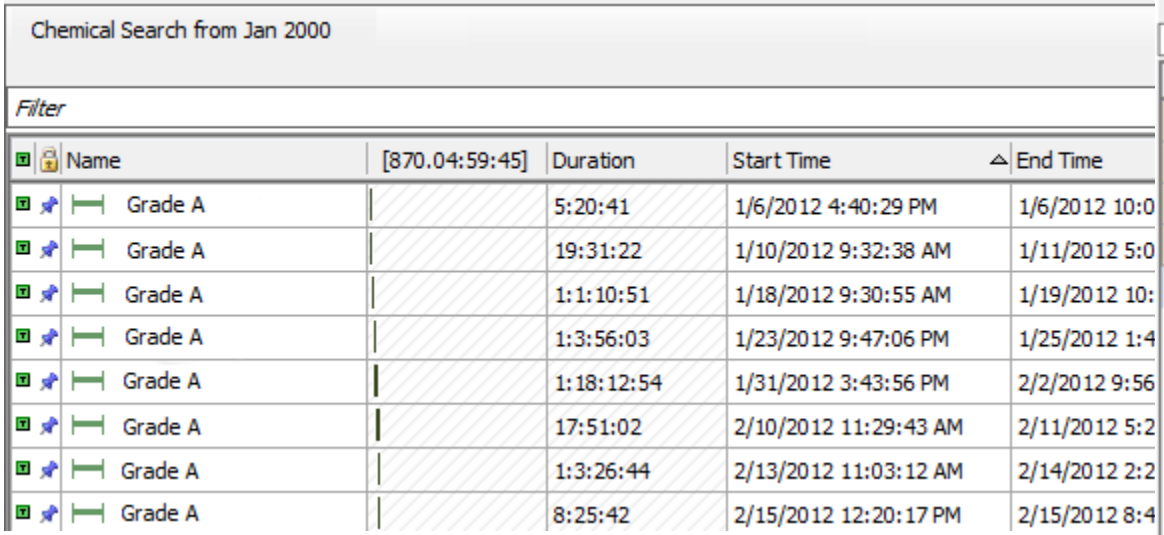
General | Table | Define Table | Version

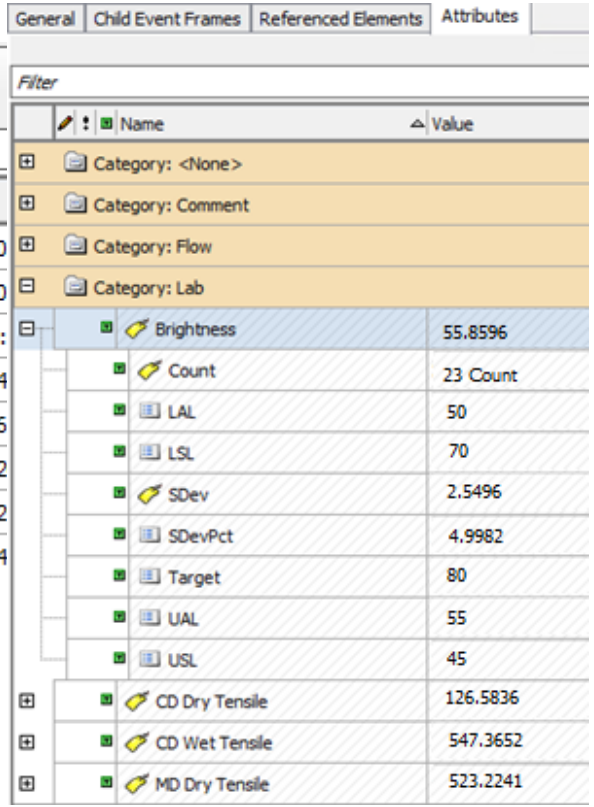
ProductSpecs

Filter

	Product	Property	Units	Target	LSL	USL	LAL	UAL
	Product 1	Basis weight	lbs/ream	10			8	
	Product 1	Attribute 1	g.3 in.	1200	900	1500	1050	1350
	Product 1	Attribute 2	g.3 in.	1200	900	1500	1050	1350
	Product 1	Attribute 3	g.3 in.	500	455	555	480	520
	Product 1	Brightness	MacBeth	50	45		48	55

Event Frames – Grade Runs





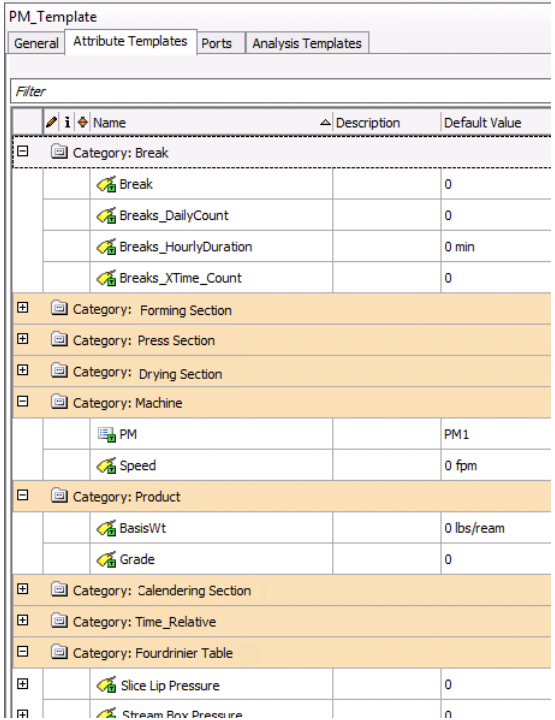
Rapid Insight – Thousands of Grade Runs – What's Best?

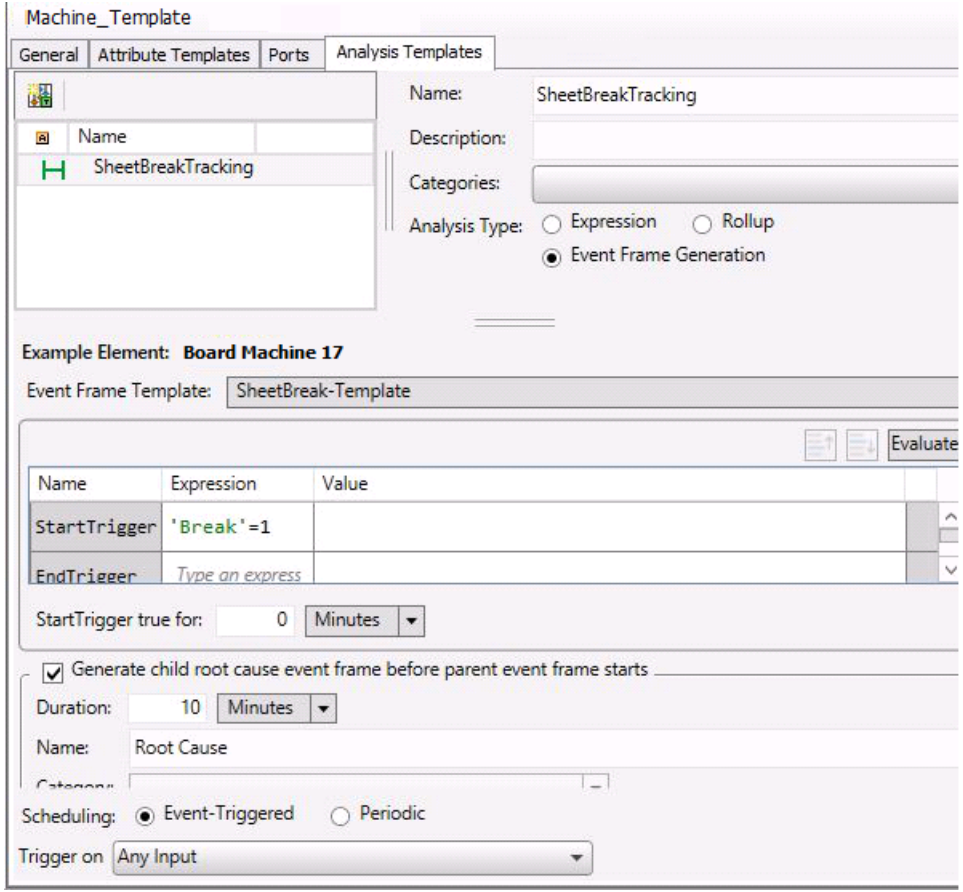
Mining the Data

- Did I follow the recipe? Show me by grade…
- How often, how much, and when do I deviate from recipe?
- How does Broke in the stock affect this?
- How does Refiner (HPD/Ton) affect this?
- What is my best run?

Rapid Insight – Best Grade Runs

Experiment #2 – Sheet Breaks

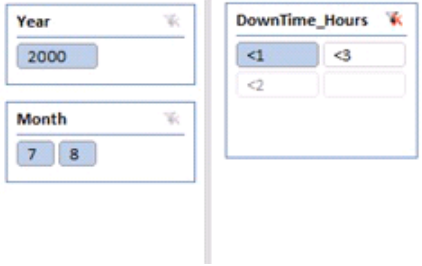


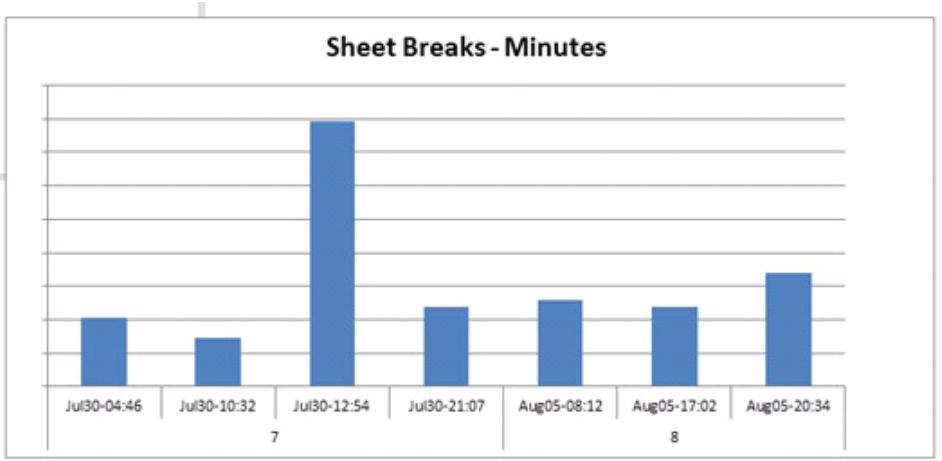


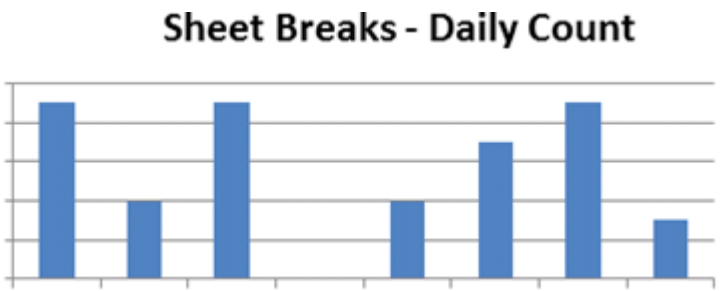
Sheet Break Data Mining

- Sheet breaks count by day, by grade, by machine
- Sheet breaks duration…
- Days without sheet breaks?
- Refiner Power (HPD/Ton) and its effect?
- Stock Blending Effects

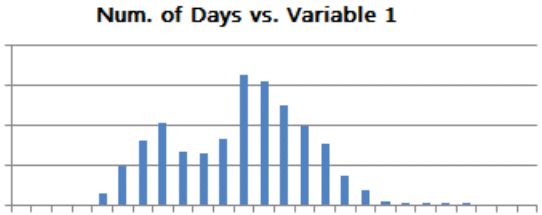
Rapid Insight

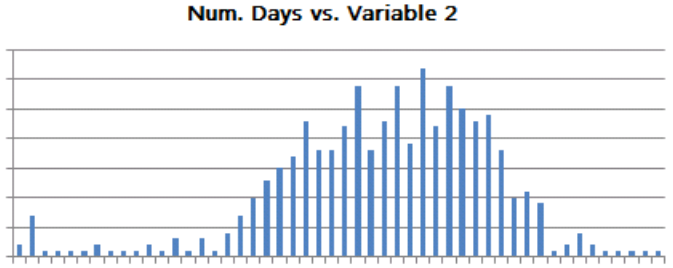


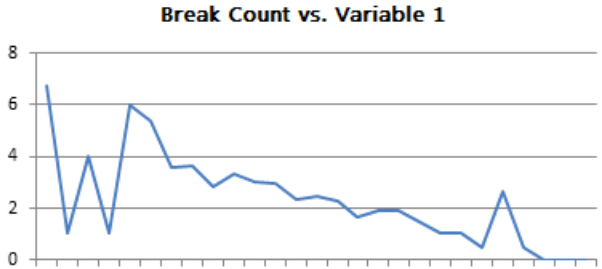


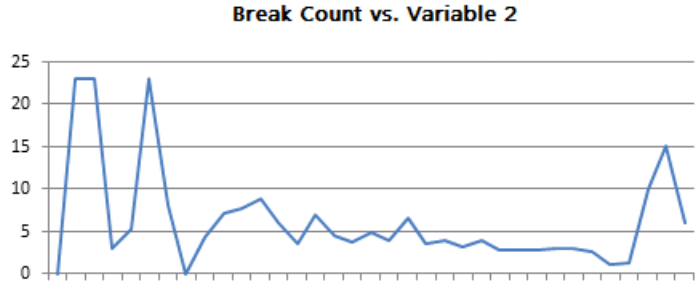


Rapid Insight









Experiments - Conclusion

- Easy to recognize outlying data
- Easy to analyze data from large time range
- Easy to manipulate slicers to select desired process parameters
- Still need to allocate process expert's time to help create model and analyze data

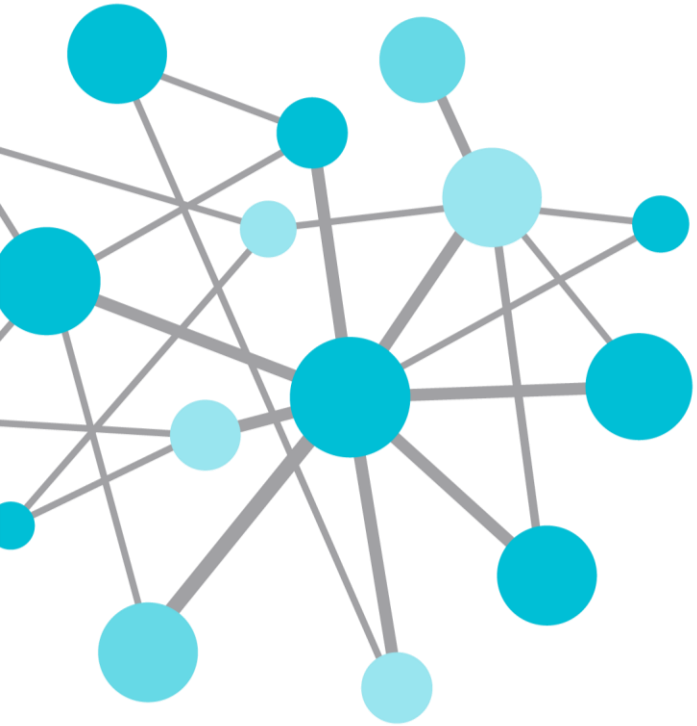
Experiments - Next Phase

- Use predictive analytics to forecast product properties based on current process changes.

Questions

Please wait for the microphone before asking your question

Please state your name and your company



THANK YOU

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