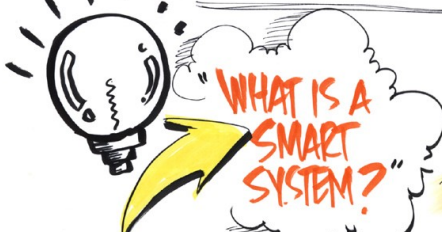


## A SYSTEM OF SYSTEMS APPROACH

Radically Improving ORGANIZATIONAL EFFECTIVENESS, OPERATIONS, and CLIENT-CENTERED HEALTH.

- Charles Pickar
- Kim Richeson
- Sidore Sobkowski
- Daniel Stein, Moderator



## WHAT IS A SMART SYSTEM?

- ADVANCED SOFTWARE is available.
- POWER vs. HEURISTICS.
- EVOLVING CAPABILITIES, KNOWLEDGE
- NEW WAYS of PREDICTION, SENSING...

- RIGHT DATA?
- RIGHT TIME?
- RIGHT PLACE?
- RIGHT PERSON?

What boundaries/policies do you have to address?

Who are the STEWARDS of the DATA?

## e.g. WORKER CONNECT

- THINK ACROSS SYSTEMS...
- WHAT ARE THE BEST POSSIBLE OUTCOMES?
- OWNERSHIP of the DATA — clarity around who owns the data.

## HOW CAN I MAKE IT BETTER?

- ✓ THINK BIG but IMPLEMENT on a SMALL, DO-ABLE SCALE.
- ✓ GAIN CONFIDENCE through QUICK WINS.
- ✓ Be TRANSPARENT...

## The NYC EXAMPLE...

### A more DATA-CENTRIC SYSTEM?

- Structured and Unstructured Data...
- Different types of Data...
- Just in time data.

# ? WHAT'S THE PROBLEM?

- LEADERSHIP?
- CULTURE?
- GOVERNANCE?
- RESOURCE?
- ARCHITECTURE?
- SYSTEMS?
- BUDGET?

Lots of us have done "systems engineering..."

HEY! I've done THIS BEFORE!

... and I'm not even a systems engineer.



A STRUCTURED DEVELOPMENT PROCESS...

THERE HAS TO BE A BIG PICTURE OF WHAT YOU WANT.

## SYSTEMS ENGINEERING

1. A Set of SOLUTIONS...
2. Starting with NEEDS or PROBLEMS.
3. What CAPABILITIES do you have? → Assess what you have, e.g. data, legacy systems, architecture, etc.
4. VERIFY.
5. DEPLOY!

## BOUNDARIES...

What are the strategies for defining boundaries?

## SYSTEM...

## SYSTEMS THINKING

### INPUTS...

### OUTPUTS...

Single Code... e.g.

## ESSENCE

Pulling together data from systems of systems to monitor public health.



• Animal Data...



• Phone Calls...



• Medication Sales...



• Absenteeism...

In order to TRACK possible public health issues/outbreaks, you need to monitor data sets from a variety of sources...

## AGILITY!

Be FLEXIBLE!

ADAPT.

BE PREPARED TO BE WRONG SOMETIMES.

YOU DON'T KNOW WHAT PEOPLE ARE GOING TO DO.

# THINGS CHANGE FAST!

Team orientation to think about the data domains.

As many different perspectives as possible.

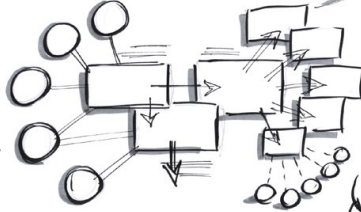
## COMPLEX SYSTEMS

Complexity is the BANE of our EXISTENCE!

- Emergent Behavior
- People
- Control over the system
- Heterogeneity

The BIGGEST COMPLEXITY FACTOR!

...but it's the WORLD we LIVE in...



I DID IT BECAUSE I DIDN'T KNOW I COULDN'T!

This is what Complex Systems engineering is ALL about!

Can I LINK small component systems instead of launching a BIG INITIATIVE?

You can — and it's admirable to think about linking systems on a smaller scale... but systems are connected... and where do you stop?

## WHAT ABOUT YOUR DATA?

- Data QUALITY.
- SHARING of DATA. — Is it sharable?
- "People will always want new FEATURES and DATA."
- Inclusive of DATA from a variety of SOURCES/SYSTEMS.
- Embed "PEOPLE" domain data right from the start.