BPC/PCEA Voting Technology Discussion

Election Process Modeling for Standards Development

Purpose and Approach

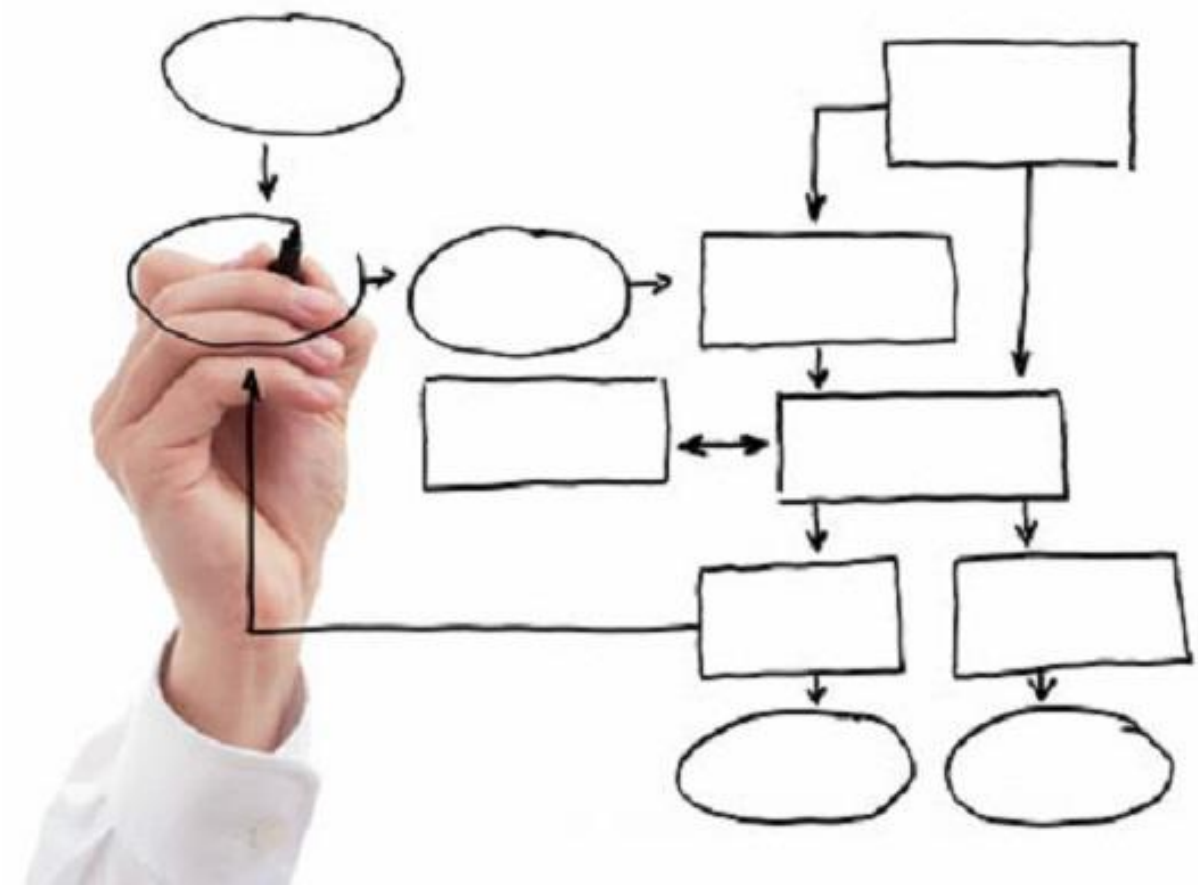
December 9-10, 2015

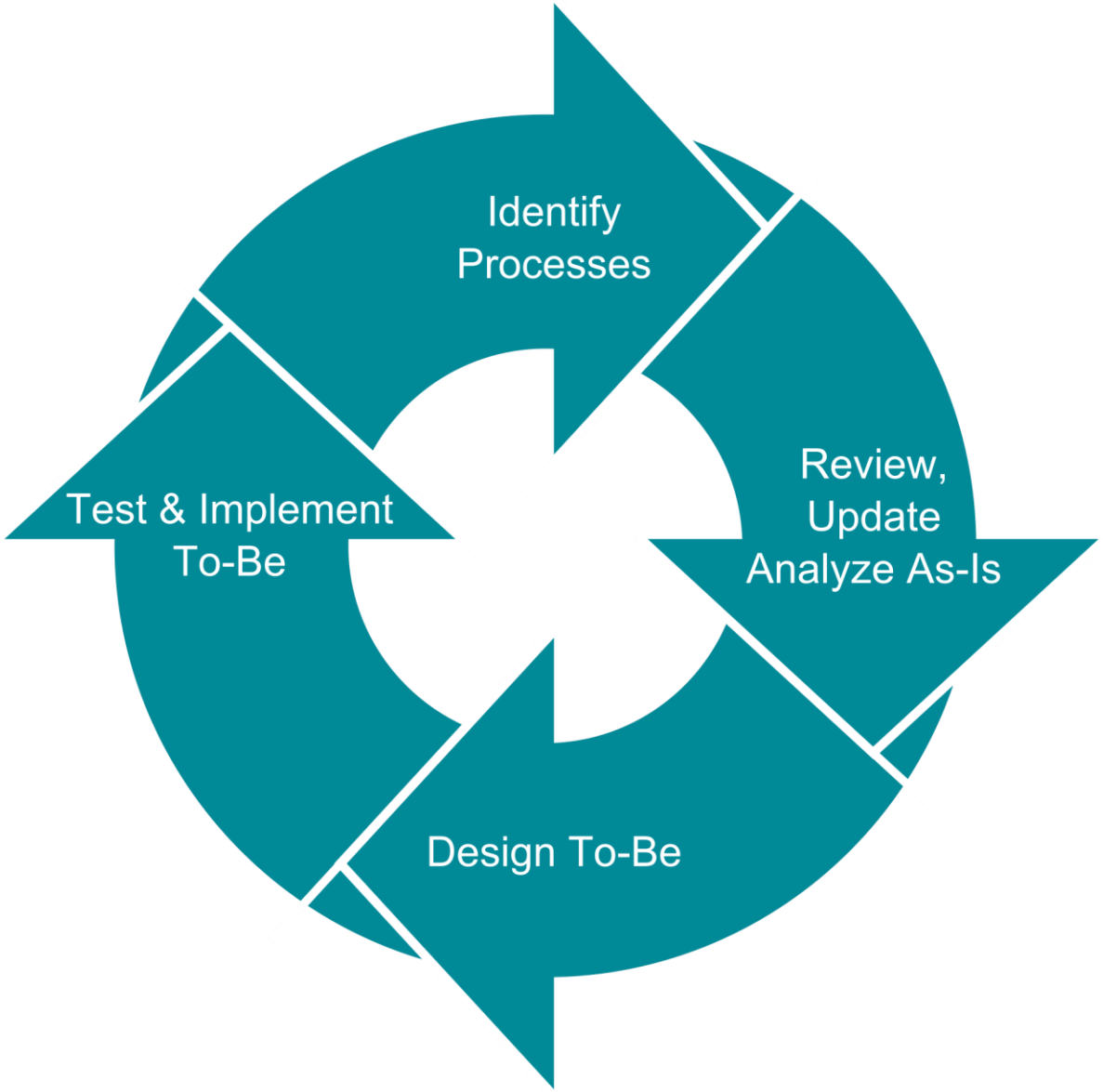
Nashville, Tennessee

BIPARTISAN POLICY CENTER

the Presidential Commission on Election Administration

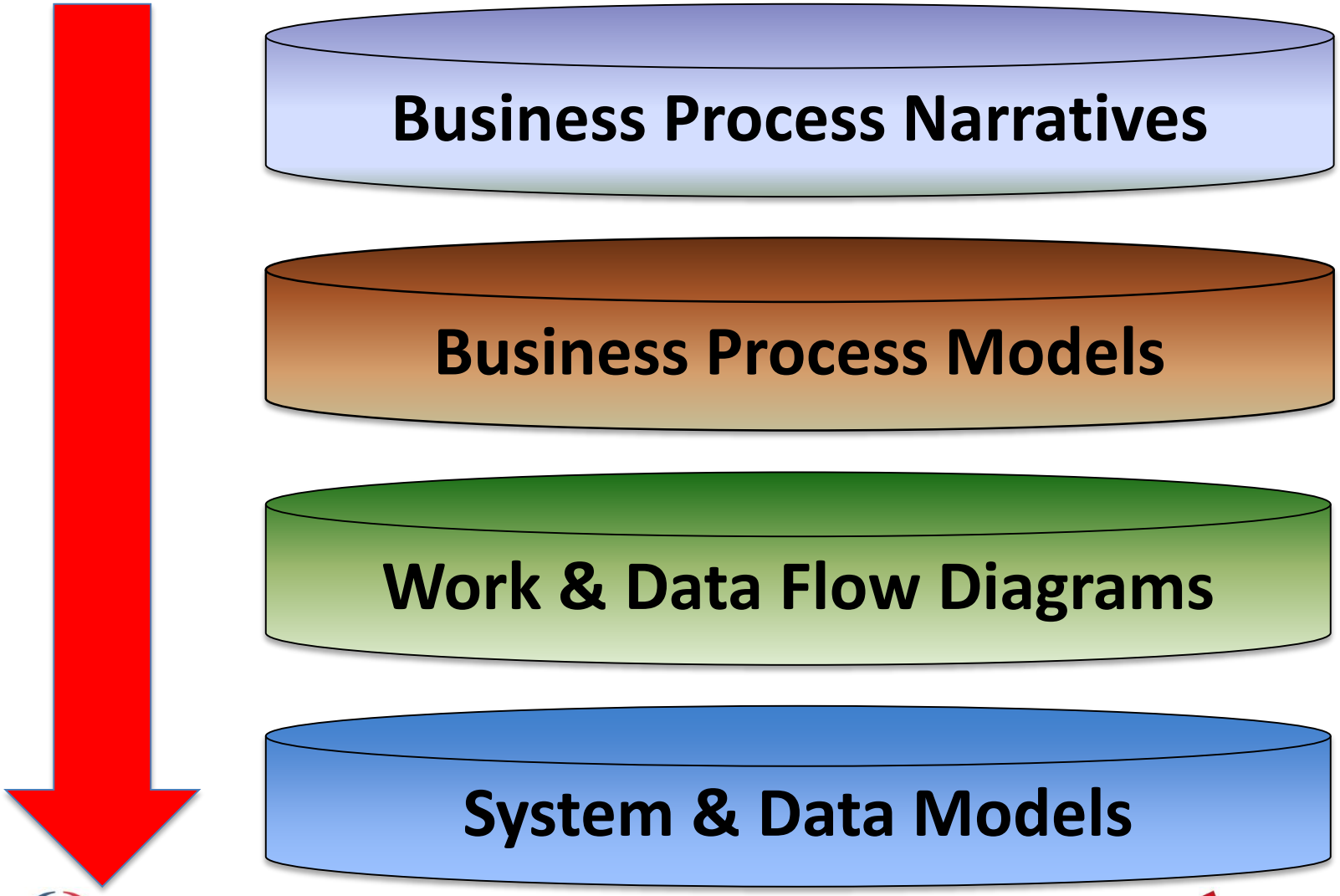
Why model processes?





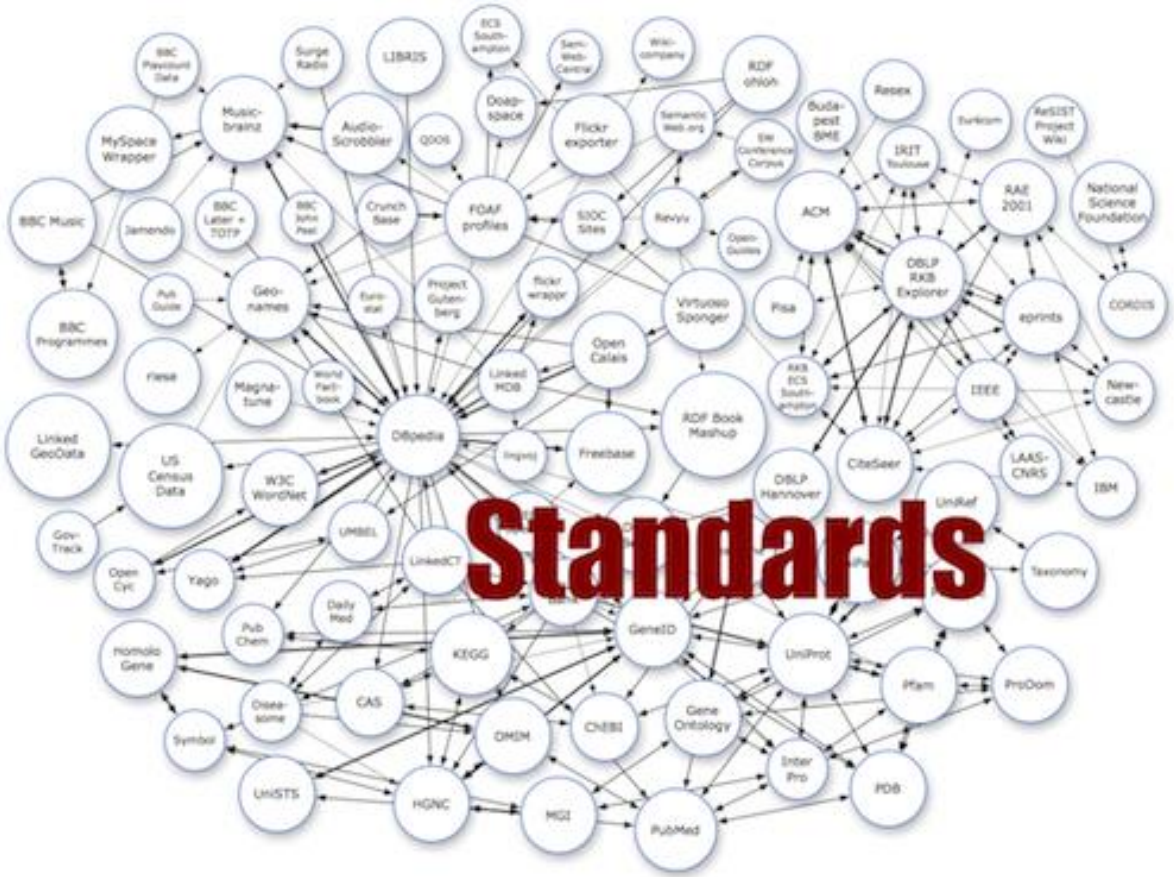
Business Process Reengineering Cycle

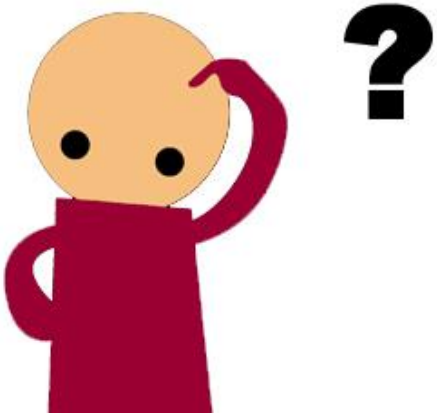
Modeling Processes



BIPARTISAN POLICY CENTER

the Presidential Commission on Election Administration


Standards
DBpedia
Geo-names
Music-brainz
Audio-Scrobbler
LIBRIS
Flickr exporter
FOAF profiles
Crunch Base
Doap-space
RDF ohloh
Resex
ACM
RAE 2001
National Science Foundation
DBLP RKB Explorer
eprints
IEEE
New-castle
CiteSeer
LAAS-CNRS
IBM
UniRef
Taxonomy
Pfam
ProDom
UniProt
Gene Ontology
Inter Pro
PDB
PubMed
MGI
HGNC
UniSTS
Symbol
Disea-some
CAS
OMIM
ChEBI
KEGG
GeneID
Homolo Gene
Pub Chem
Daily Med
Yago
Open Cyc
Gov-Track
UMBEL
LinkedCT
W3C WordNet
US Census Data
Linked GeoData
Magna-tune
Flesa
BBC Programmes
BBC Music
Jamendo
MySpace Wrapper
Surge Radio
Pisa
Virtuoso Sponger
Open Calais
Freebase
RDF Book Mashup
DBLP Hannover
Pub Guide
Euro-stat
Project Guten-berg
flickr wrappr
Linked MDB
Buda-pest BME
IRIT Toulouse
Eurikom
ReSIST Project Wiki
Semantic Web.org
Open-Guides
Semi-Web-Central
Wiki-company
ECS South-ampton
Q005
BBC Later + TOTP
BBC John Peel
BBC Playcourt Data
World Fact-book
RKB ECS South-ampton
Ingvoj



Literature Review

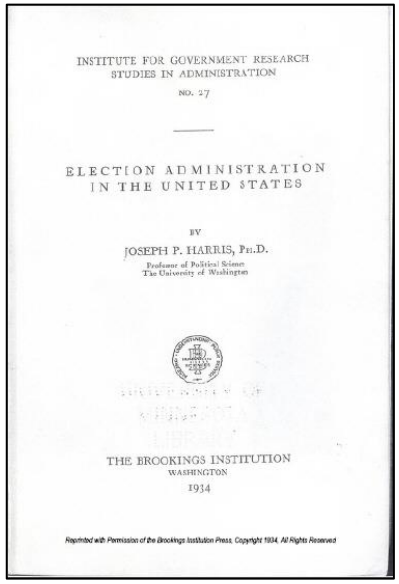
- Public search of published materials

- Some formal modeling had been done, but was scarce

Literature Review

Election Administration in the United States

– Joseph Harris
Brookings Institute 1934



INSTITUTE FOR GOVERNMENT RESEARCH
STUDIES IN ADMINISTRATION
NO. 27

ELECTION ADMINISTRATION
IN THE UNITED STATES

BY
JOSEPH P. HARRIS, PH.D.
Professor of Political Science
The University of Washington

THE BROOKINGS INSTITUTION
WASHINGTON
1934

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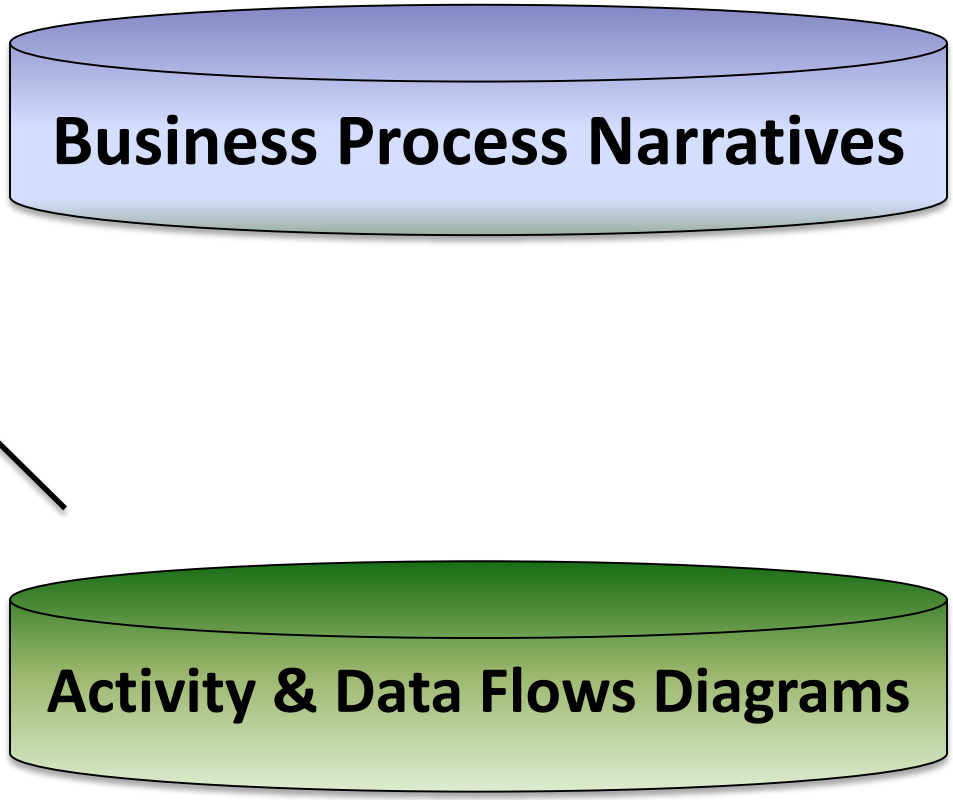
Business Process Narratives

Literature Review



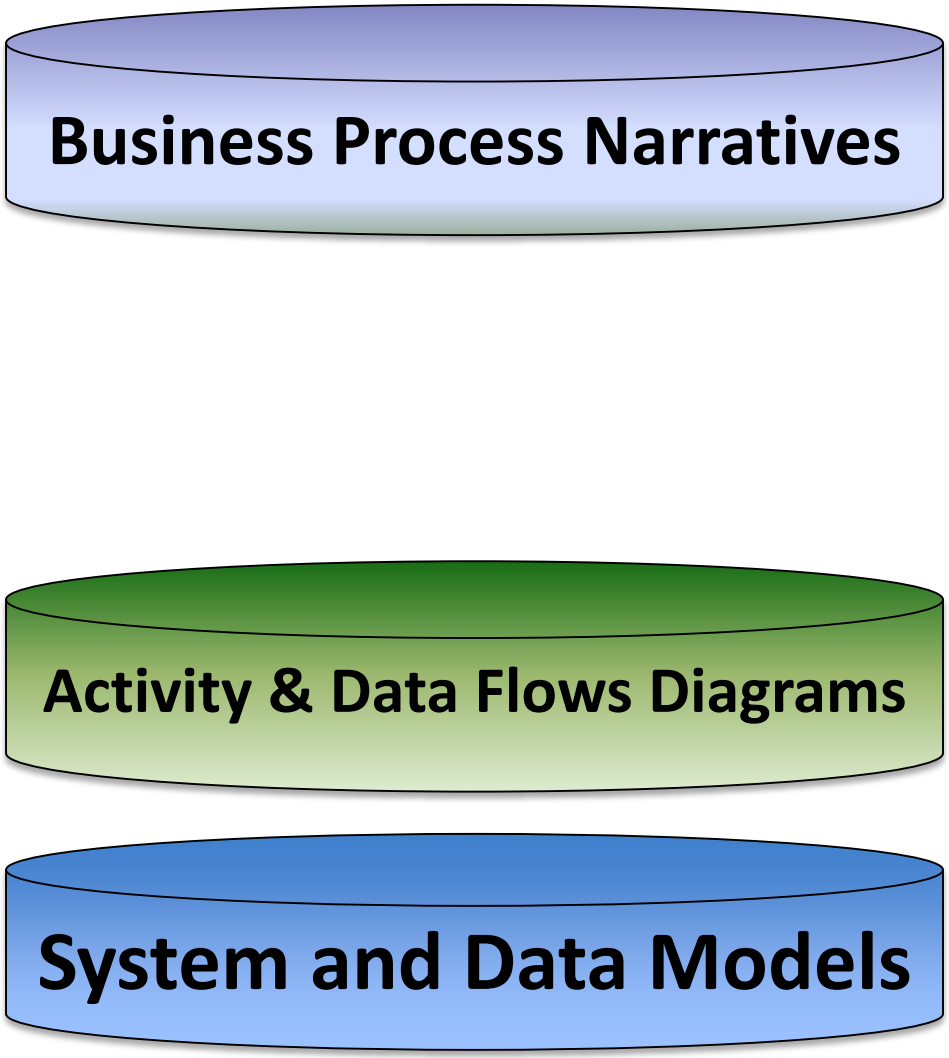
Voting System Risk Assessment

– EAC Standards Board Draft – University of South Alabama 2009

Election Markup Language (EML) L V.7 Specification

– OASIS

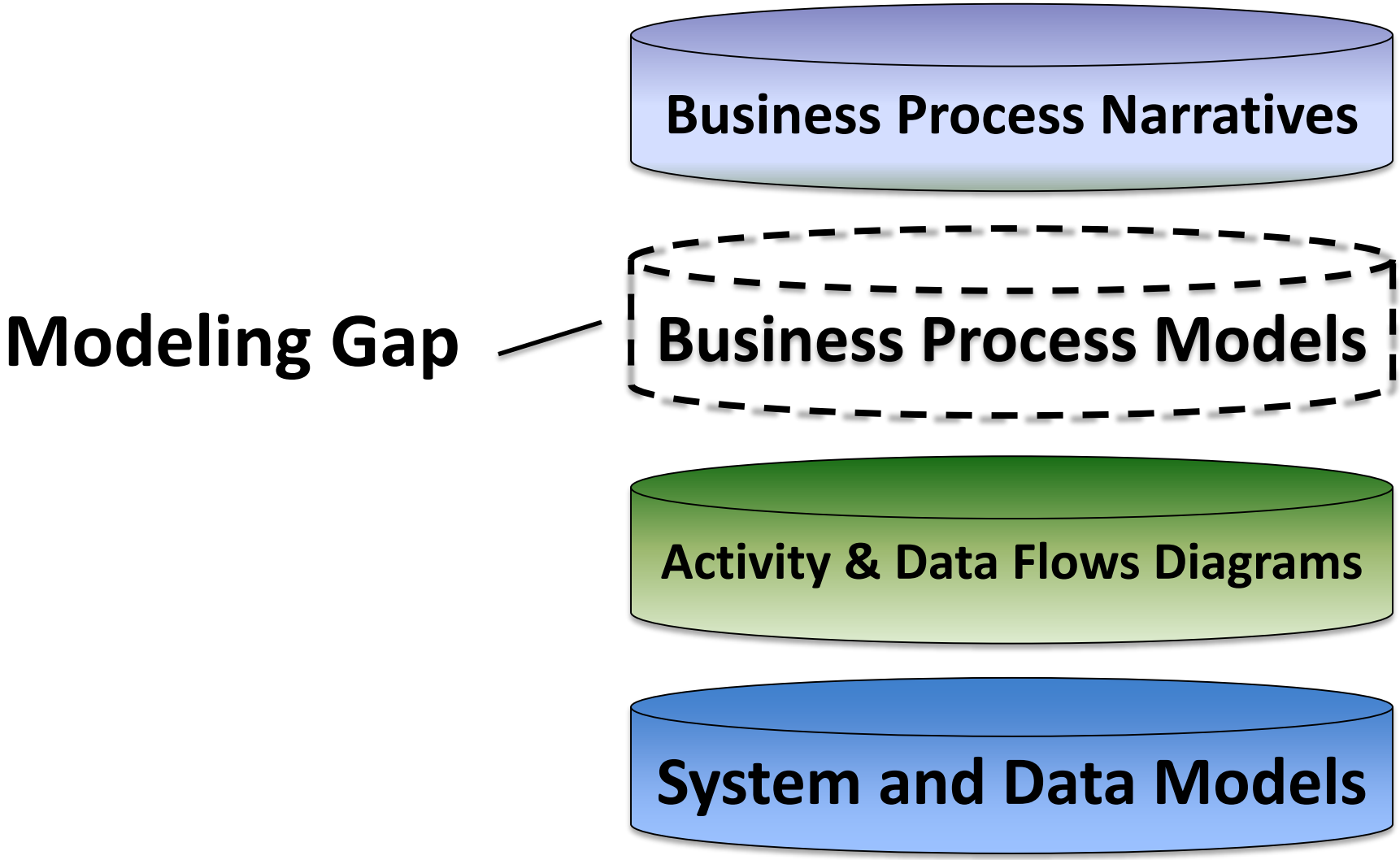
Literature Review



NIST Election Data Model

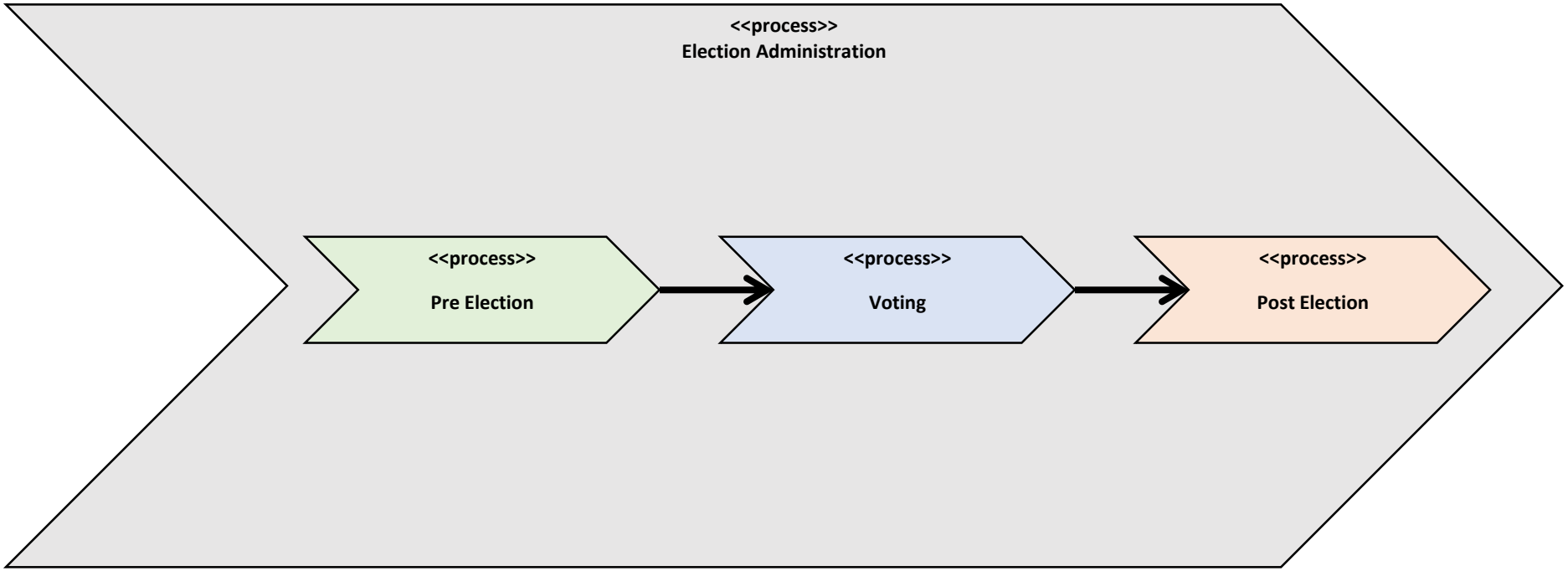
– David Flater 2009

Literature Review



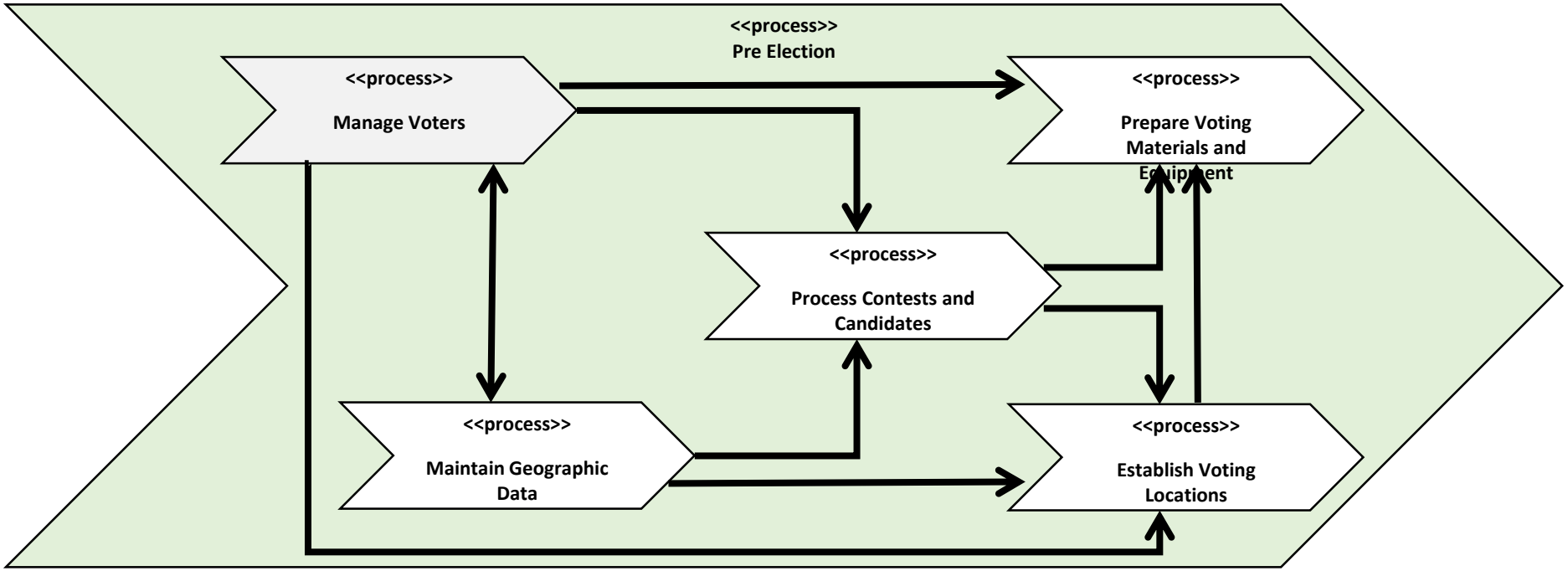
Process: Election Administration

Parent: n/a (root)
Editor: Kenneth Bennett
Date: 04/15/2015



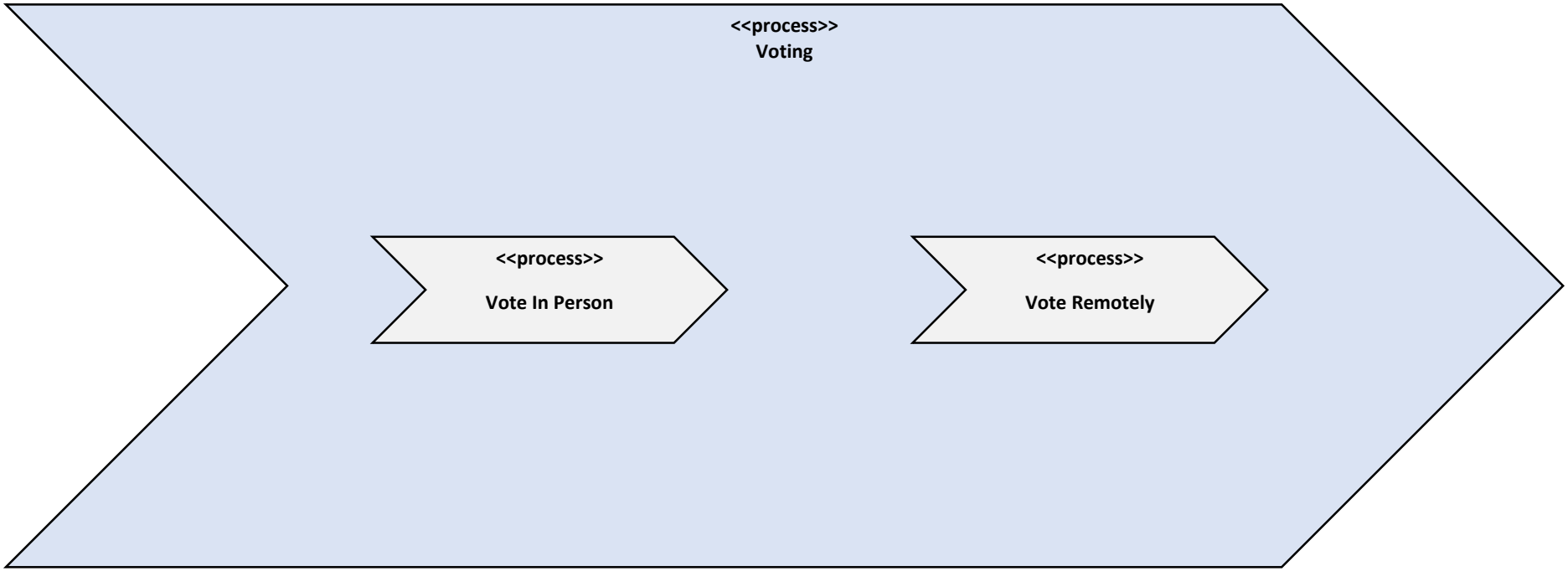
Process: Pre Election

Parent: Election Administration
Editor: Kenneth Bennett
Date: 09/15/2015



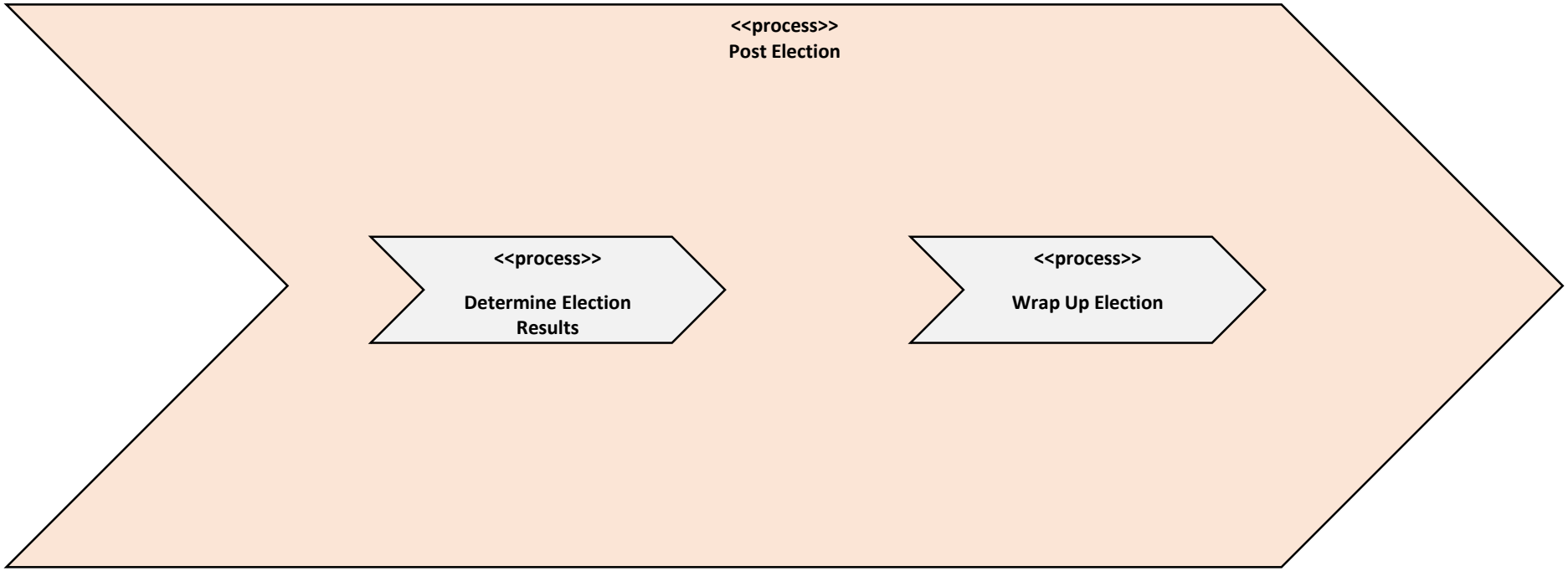
Process: Voting

Parent: Election Administration
Editor: Kenneth Bennett
Date: 04/22/2015



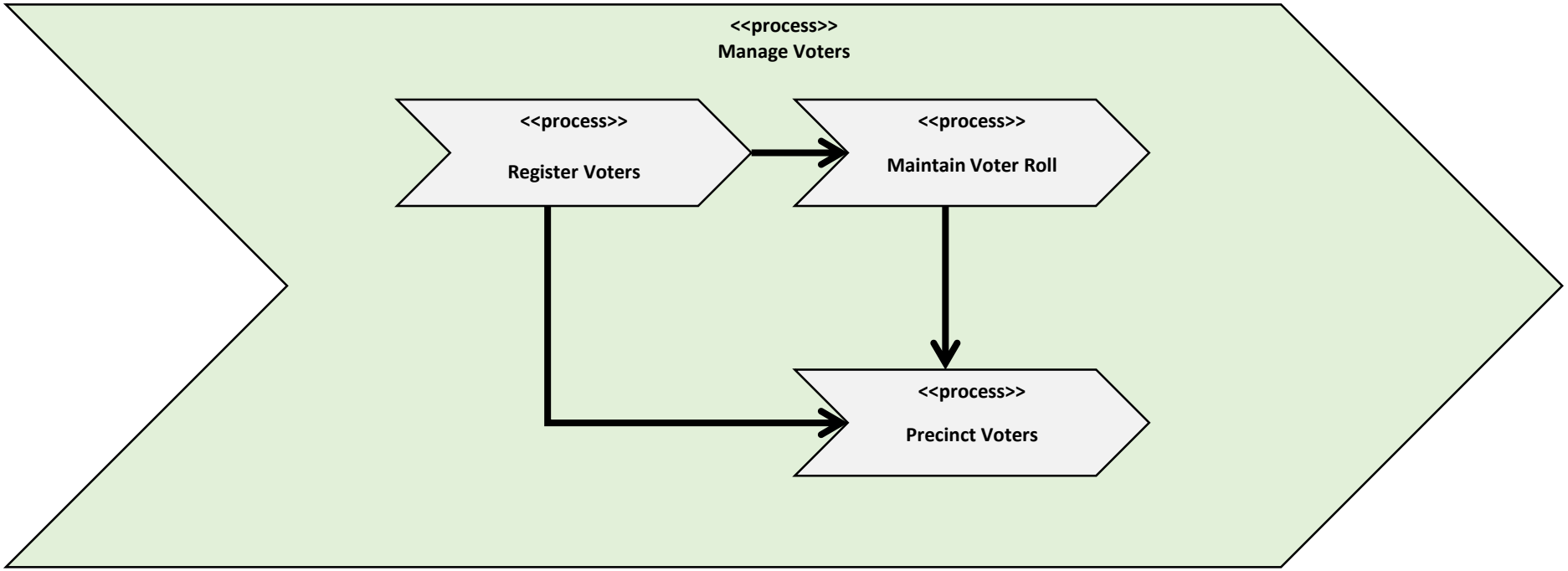
Process: Post Election

Parent: Election Administration
Editor: Kenneth Bennett
Date: 04/22/2015



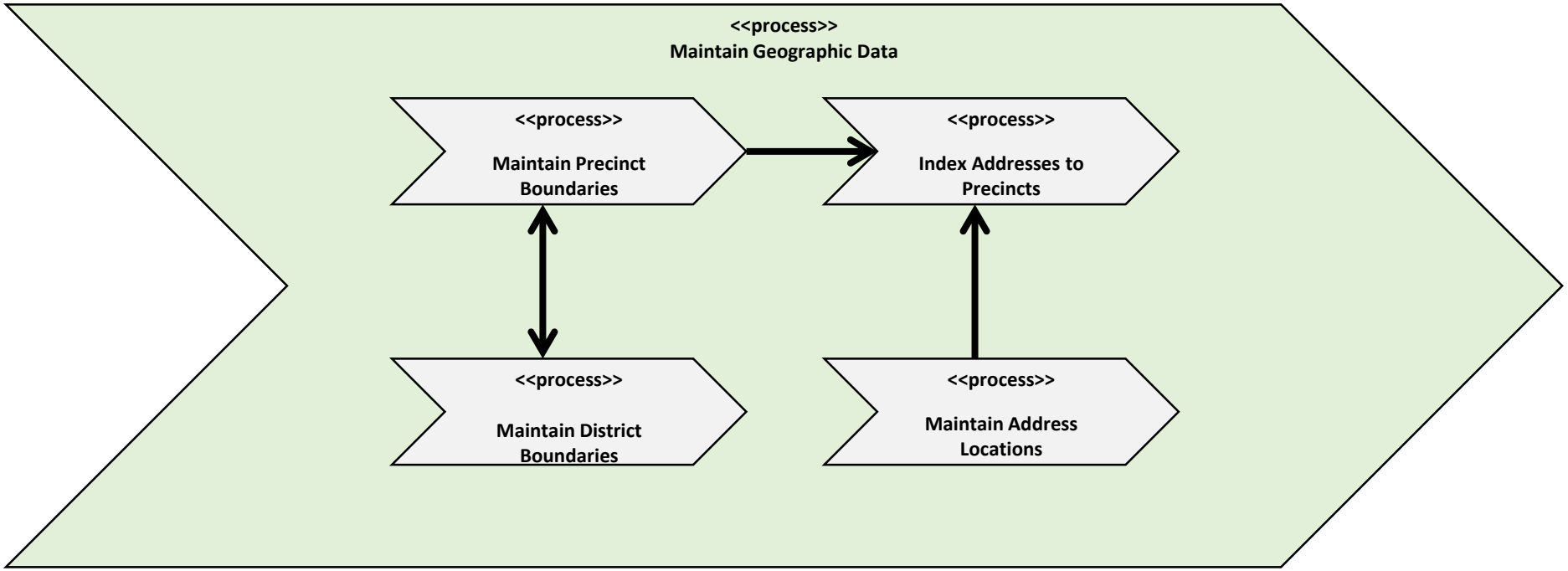
Process: Manage Voters

Parent: Election Preparation
Editor: Kenneth Bennett
Date: 09/15/2015



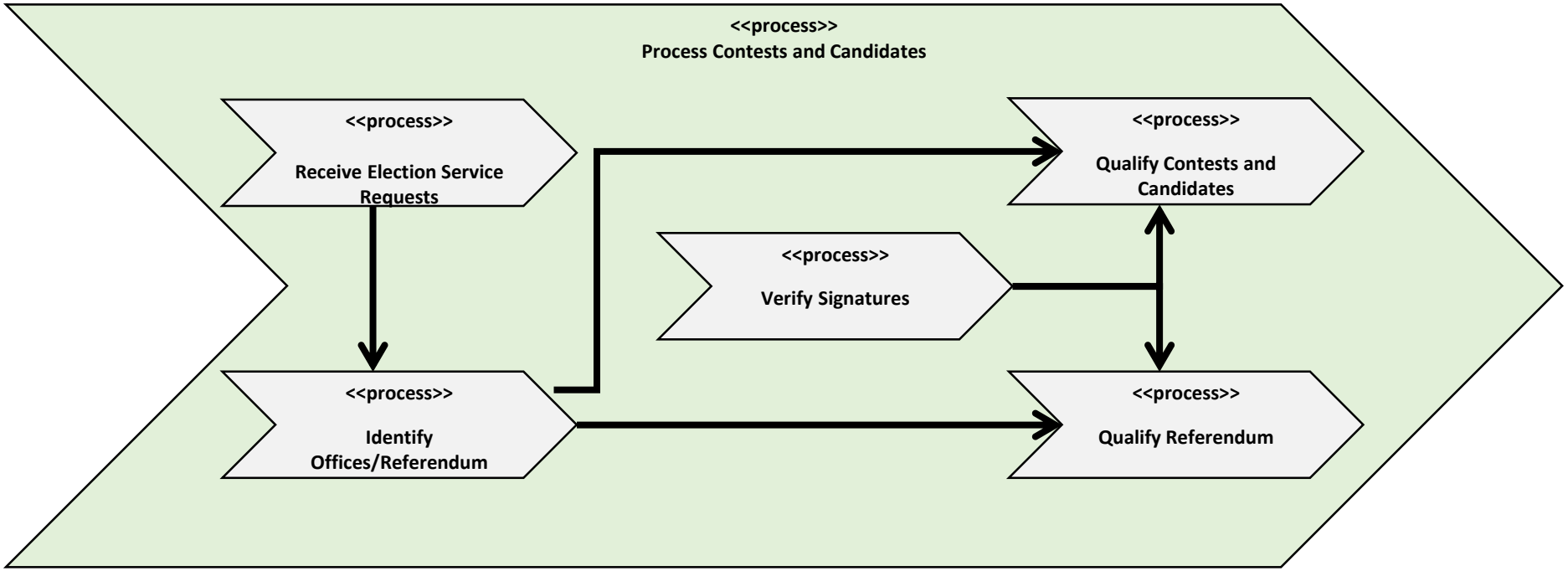
Process: Maintain Geographic Data

Parent: Election Preparation
Editor: Kenneth Bennett
Date: 09/10/2015



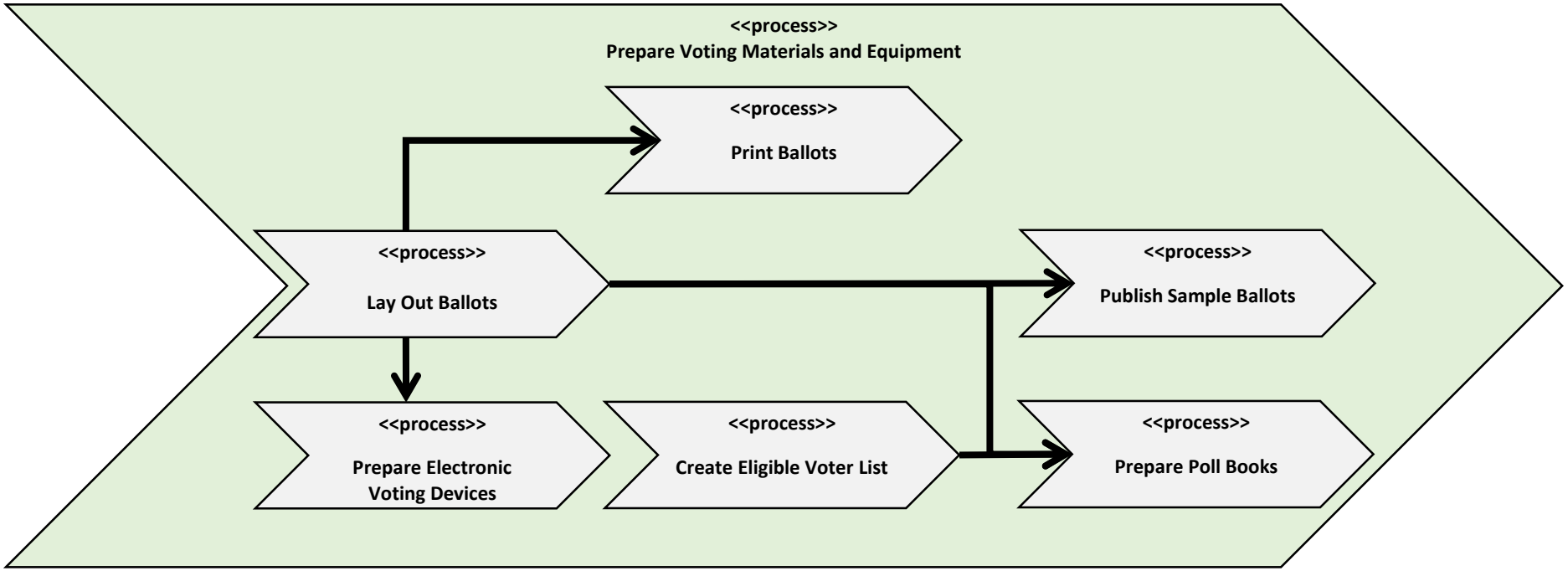
Process: Process Contests and Candidates

Parent: Election Preparation
Editor: Kenneth Bennett
Date: 04/15/2015



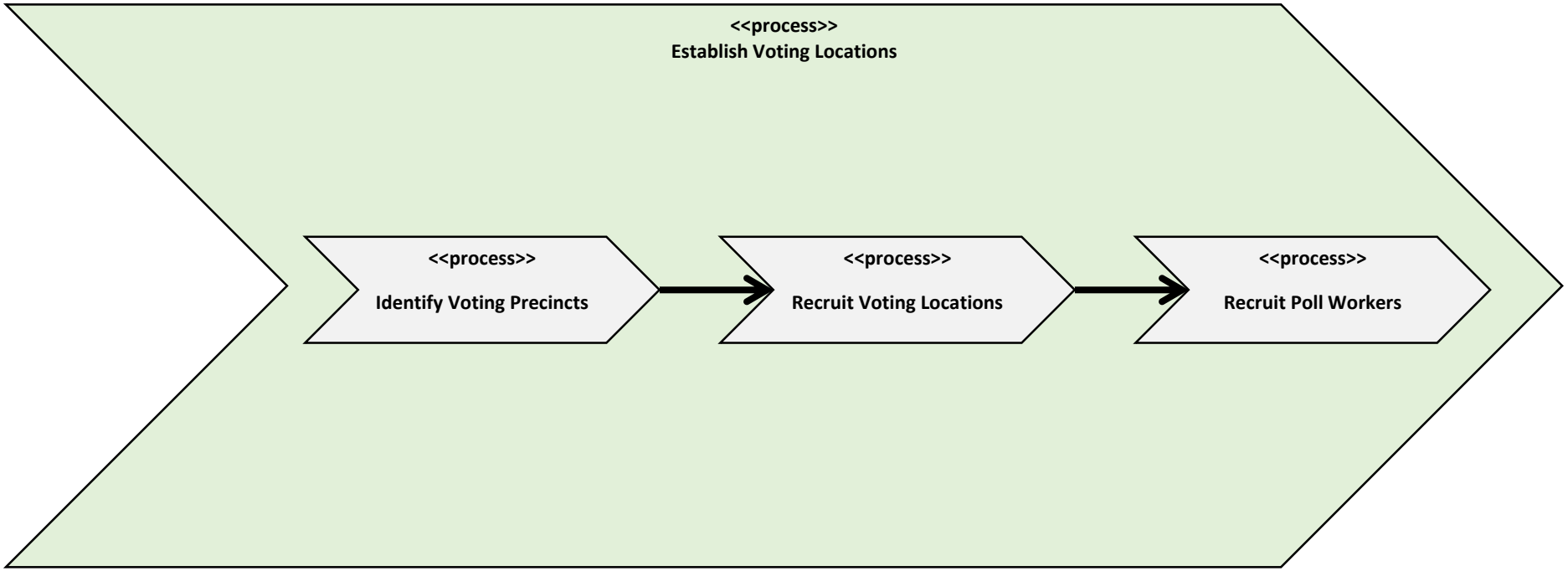
Process: Prepare Voting Materials and Equipment

Parent: Election Preparation
Editor: Kenneth Bennett
Date: 09/15/2015



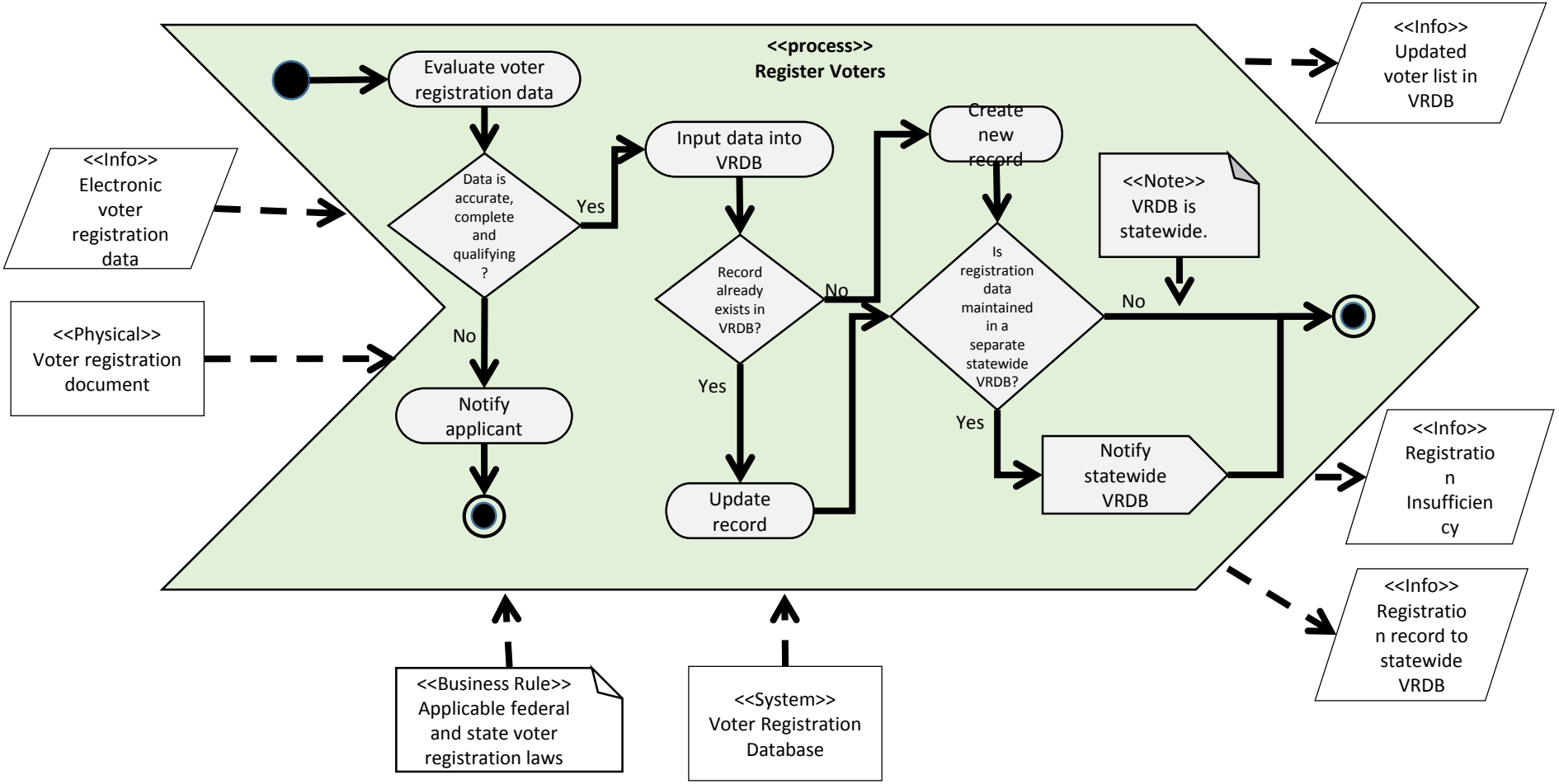
Process: Establish Voting Locations

Parent: Election Preparation
Editor: Kenneth Bennett
Date: 04/15/2015



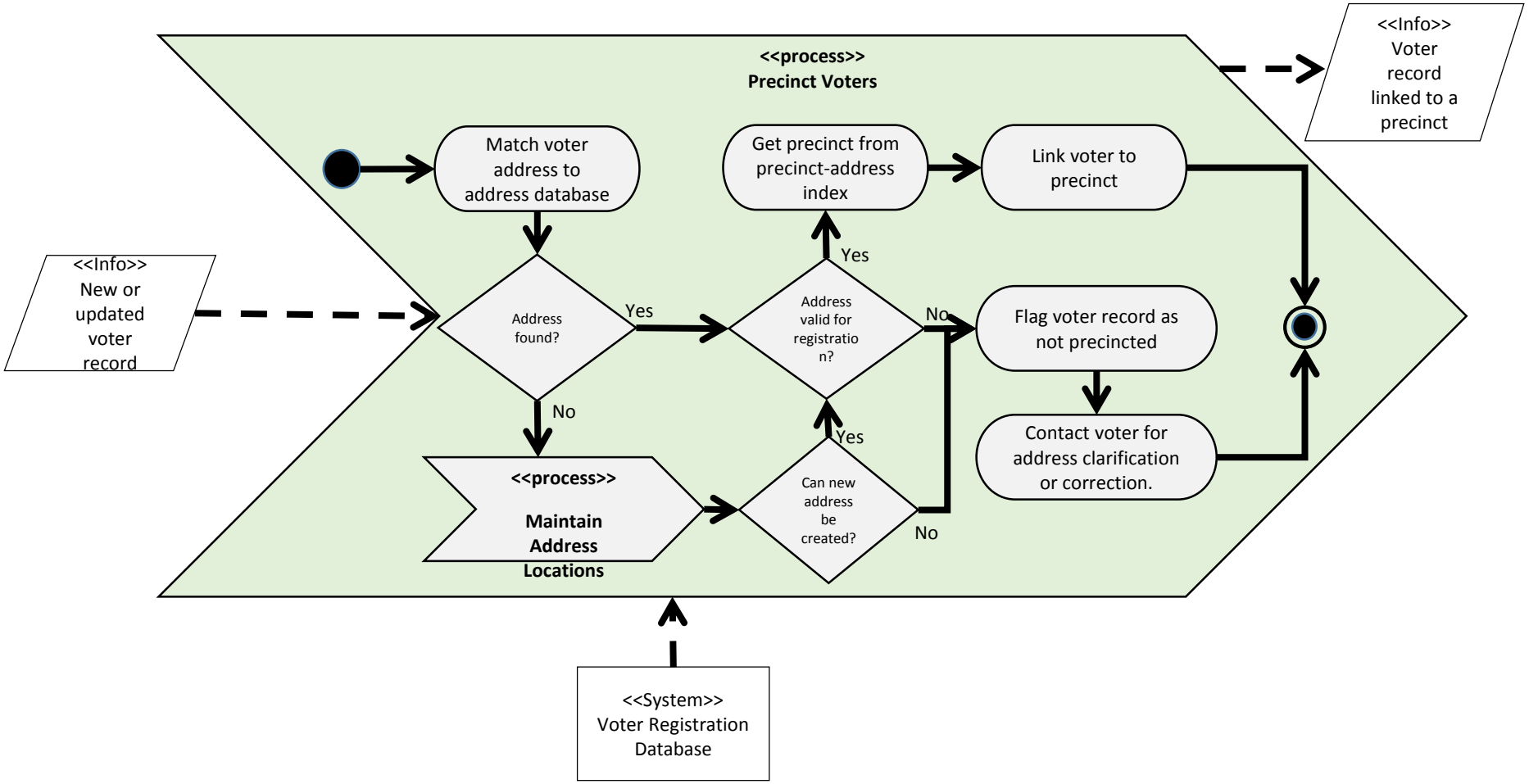
Process: Register Voters

Parent: Election Preparation/Manage Voters
Editor: Kenneth Bennett
Date: 09/15/2015

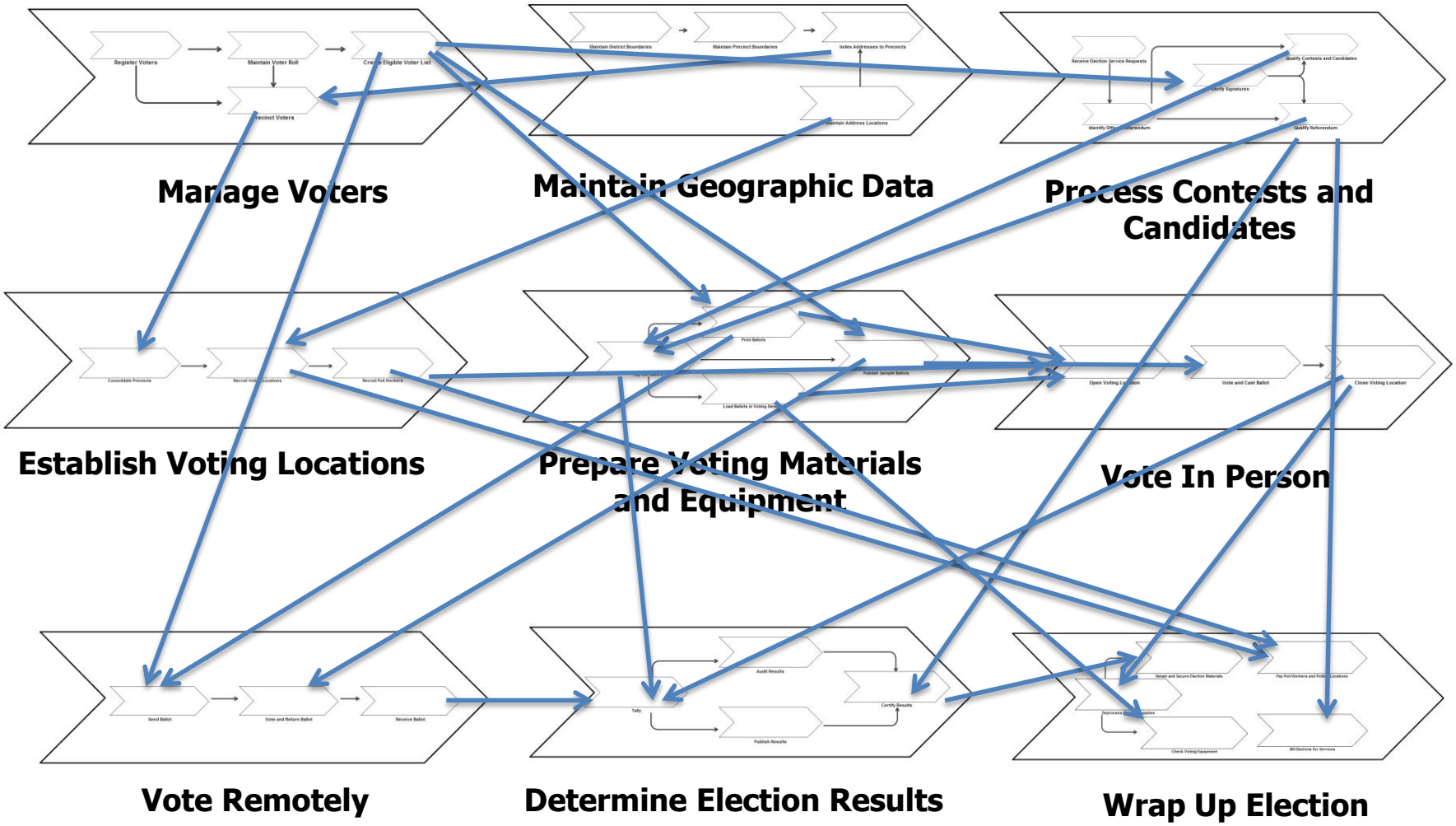


Process: Precinct Voters

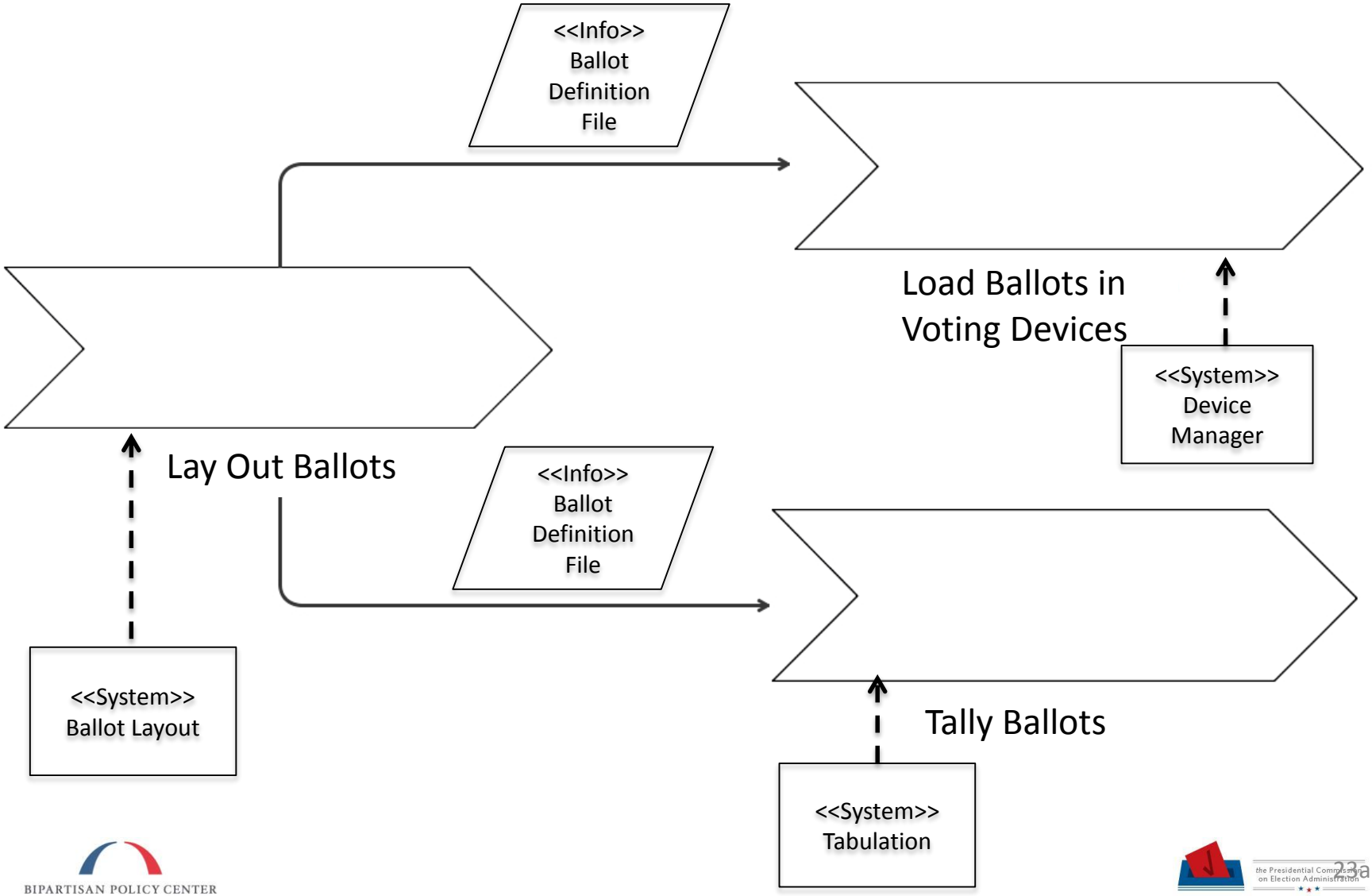
Parent: Election Preparation/Manage Voters
Editor: Kenneth Bennett
Date: 09/10/2015



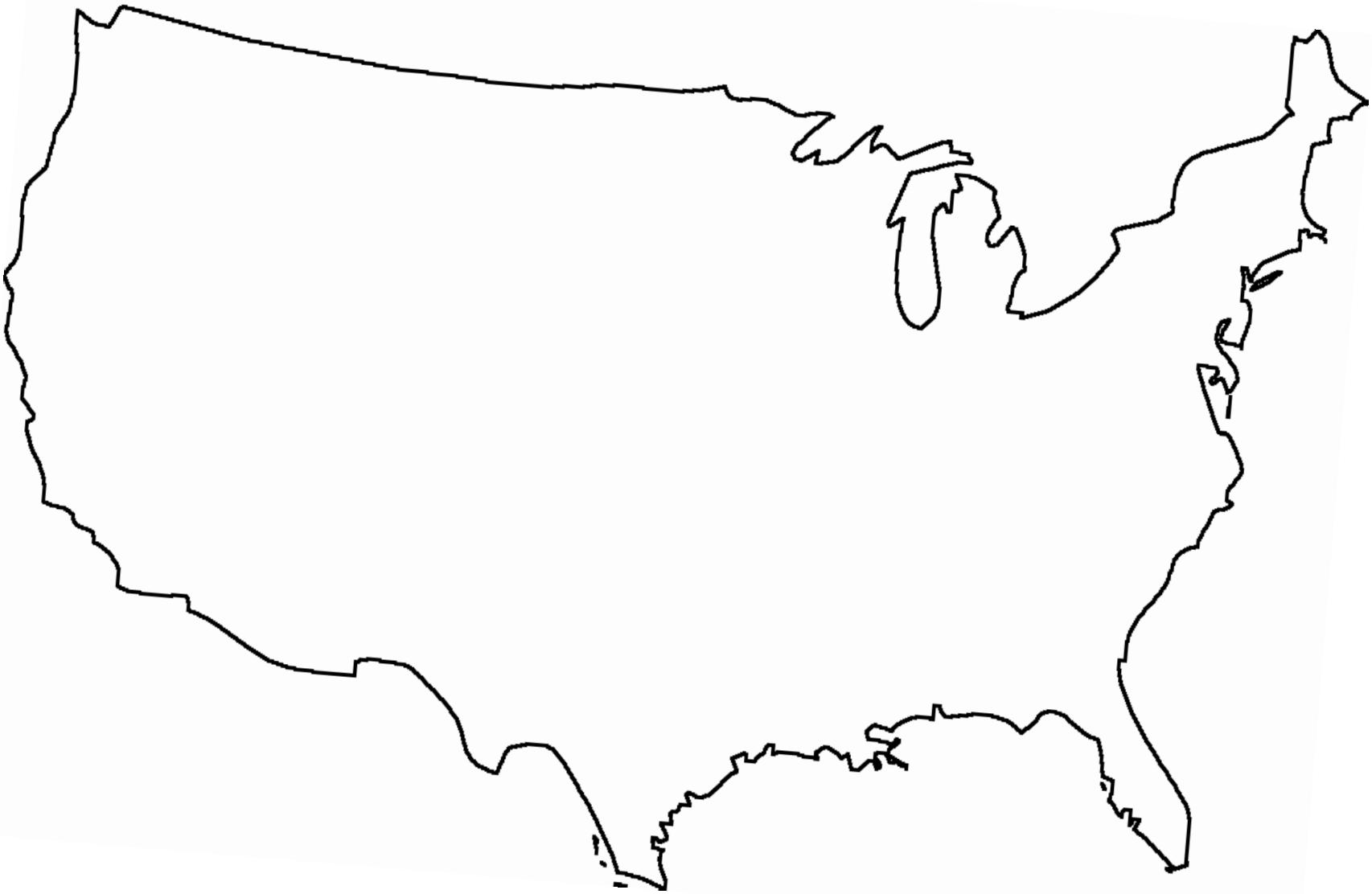
Process Interactions

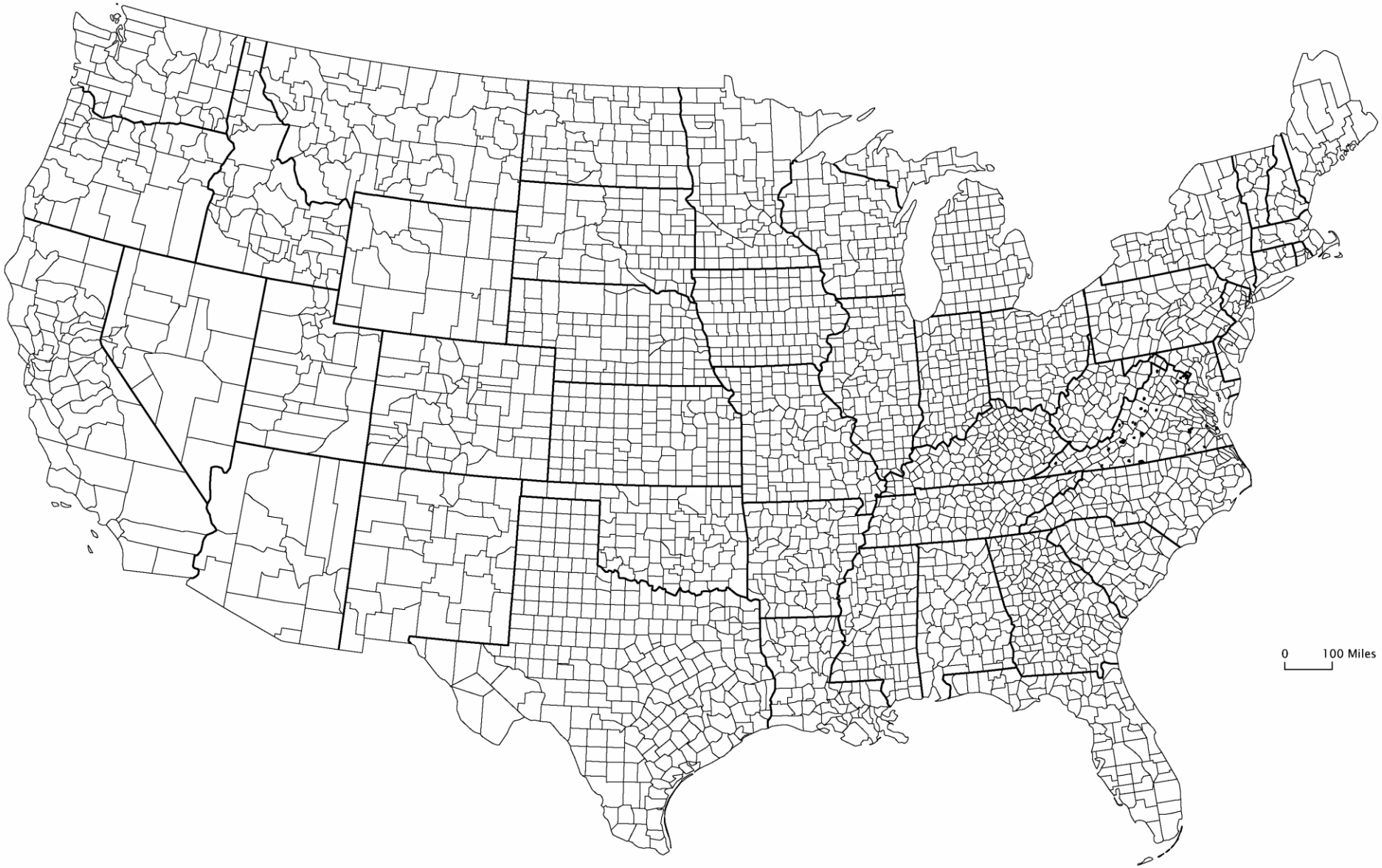


Process Interaction Details



Modeling processes of an organization is different than modeling processes of an industry.





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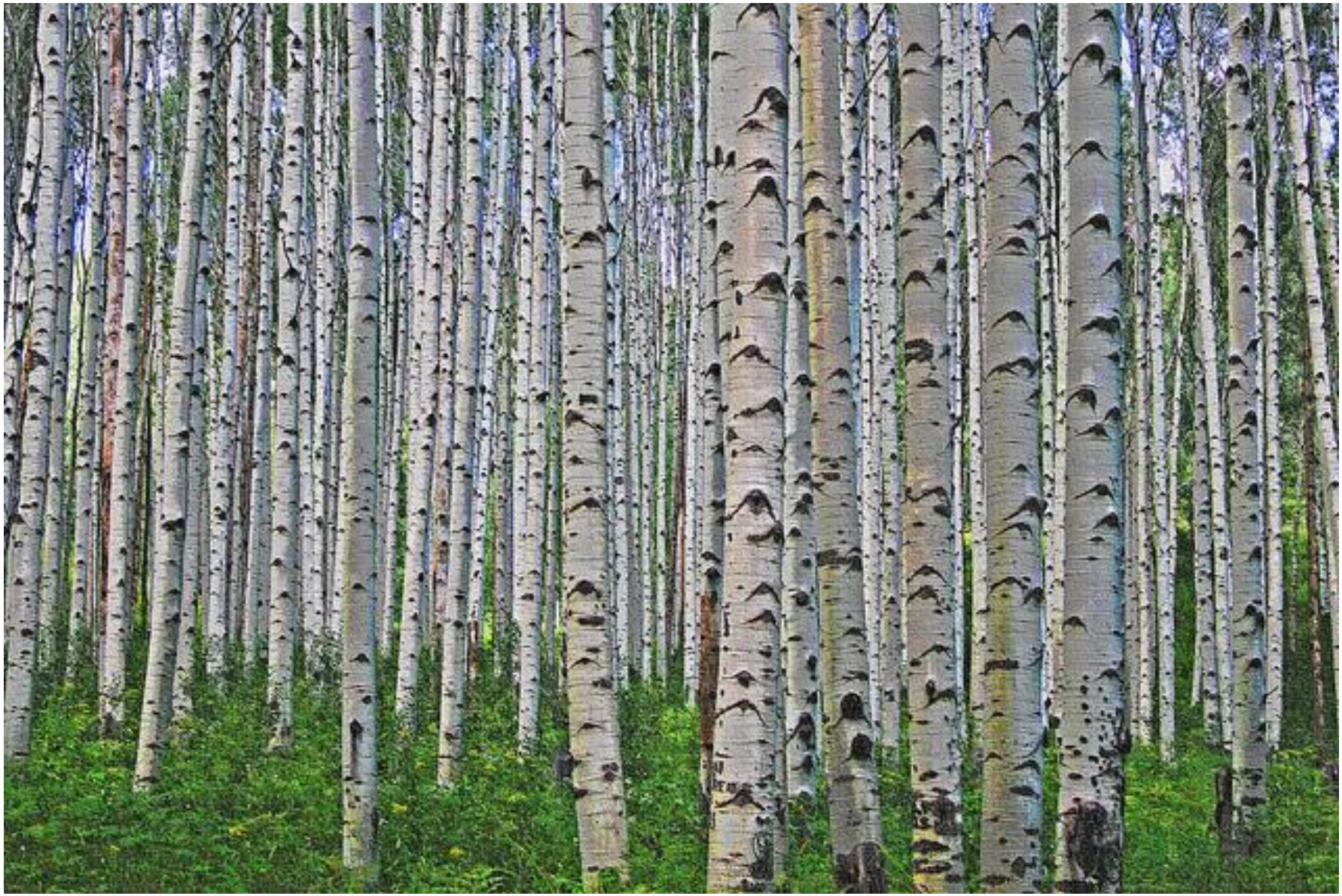


VSSC Modeling Principles

- Listen: everyone has a valid viewpoint
- Focus on commonalities, not differences
  - It is an exercise in abstraction, not description
  - When someone says, “That’s not the way we do it in <*pick your state or locality*>”, then you’re getting too detailed.

VSSC Modeling Principles

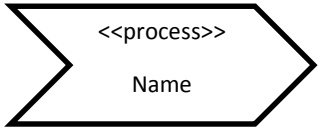
- Shoot for what is good, not what is perfect
  - Modeling is always a work in progress
- The model is informative, not normative
  - It is a framework and tool for analysis
- Use plain language of elections

VSSC Modeling Principles

- Set up a cloud-based collaboration environment
- Establish a methodology based on an established notation

Eriksson Penker Business Process UML Shapes

Process shape



Activity shape

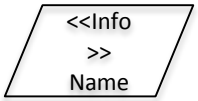
Process Start shape

Process End shape

Object Flow/
Dependency shape

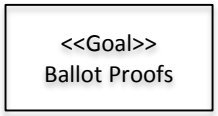
Process flow shape

Information shape

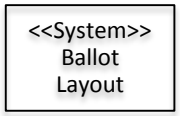


Business Rule shape

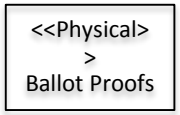
Goal shape



System Resource shape



Physical Resource shape

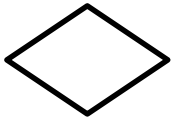


Fork and Join shape

Send Business Event shape

Receive Business Event shape

Decision shape



Decision text

Yes No

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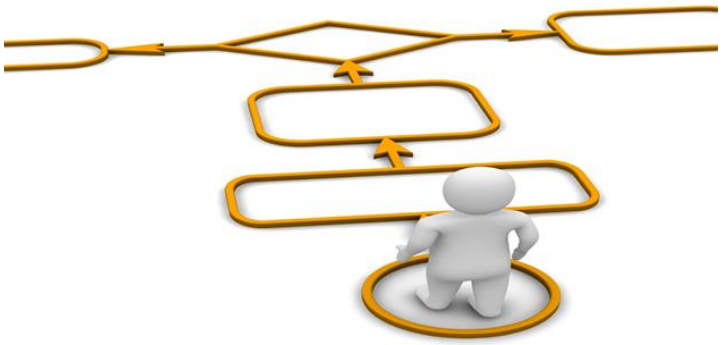
Future Steps

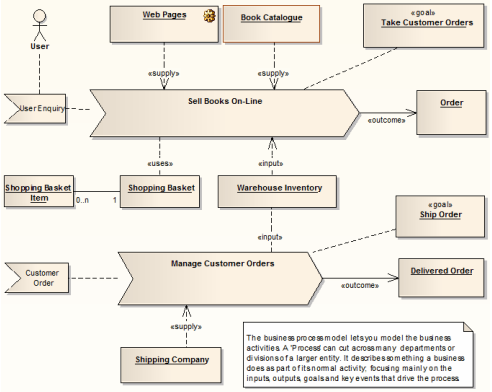
- Drill down into process details and interactions
- Calibrate models to existing works
- Develop elections glossary of terms
- Develop comprehensive high-level data model
- Final document (tell the story)

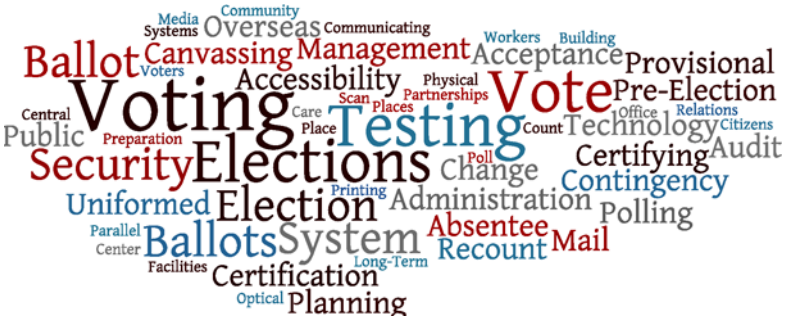


How is this useful?

Standards development

- Identify opportunities for interoperability
- Framework for developing detailed standards



Training and education

- Facilitate understanding of election processes and data
- Define a common vocabulary
- Drive innovation and process improvement
- Professionalize elections administration