

NSF OIG @ USC

# NSF R&D EXPENDITURE SURVEY

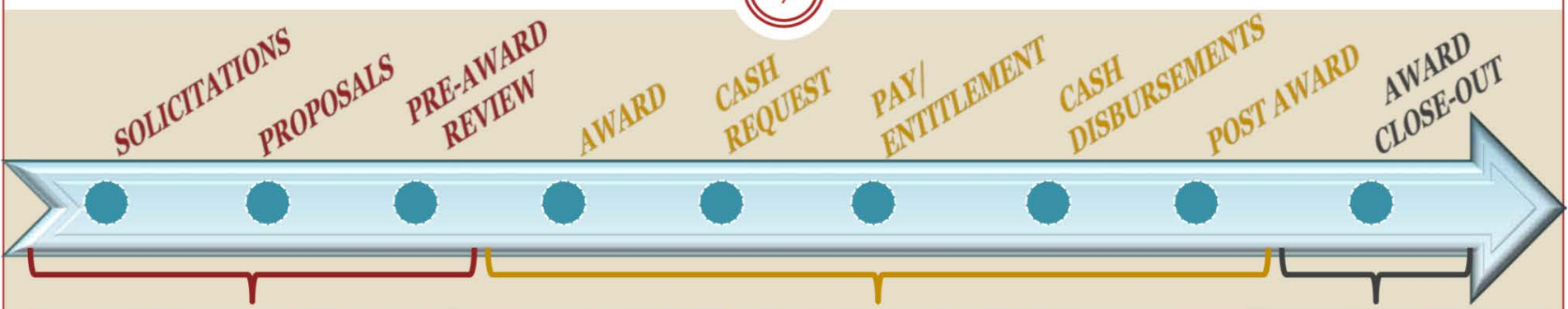
- Higher Education R&D Expenditures (2015)
  - 37.8B from Federal Agencies
    - 24.9B Basic Research
    - 9.9B Applied Research
    - 3.0B Developmental Research
    - 640 Institutions reported to survey

# NSF Data Analytics

- NSF Risk Assessment
  - Phase I – Identify High Risk Institutions
    - Ongoing monitoring (we never see this and where we were initially selected)
  - Phase II – Identify Questionable Expenditures
    - Agency Data and Institution Data is married (you will know when you're in this category)



# End to End Process for Grant Oversight



<b>PRE-AWARD RISKS</b>	<b>ACTIVE AWARD RISKS</b>	<b>AWARD END RISKS</b>
<ul style="list-style-type: none"> <li>•Funding Over Time</li> <li>•Conflict of Interest</li> <li>•False Statements</li> <li>•False Certifications</li> <li>•Duplicate Funding</li> <li>•Inflated Budgets</li> <li>•Candidate Suspended/Debarred</li> </ul>	<ul style="list-style-type: none"> <li>•Unallowable, Unallocable, Unreasonable Costs</li> <li>•Inadequate Documentation</li> <li>•General Ledger Differs from Draw Amount</li> <li>•Burn Rate</li> <li>•No /Late/Inadequate Reports</li> <li>•Sub-awards, Consultants, Contracts</li> <li>•Duplicate Payments</li> <li>•Excess Cash on Hand/Cost transfers</li> <li>•Unreported Program Income</li> </ul>	<ul style="list-style-type: none"> <li>•No /Late Final Reports</li> <li>•Cost Transfers</li> <li>•Spend-out</li> <li>•Financial Adjustments</li> <li>•Unmet Cost Share</li> </ul>

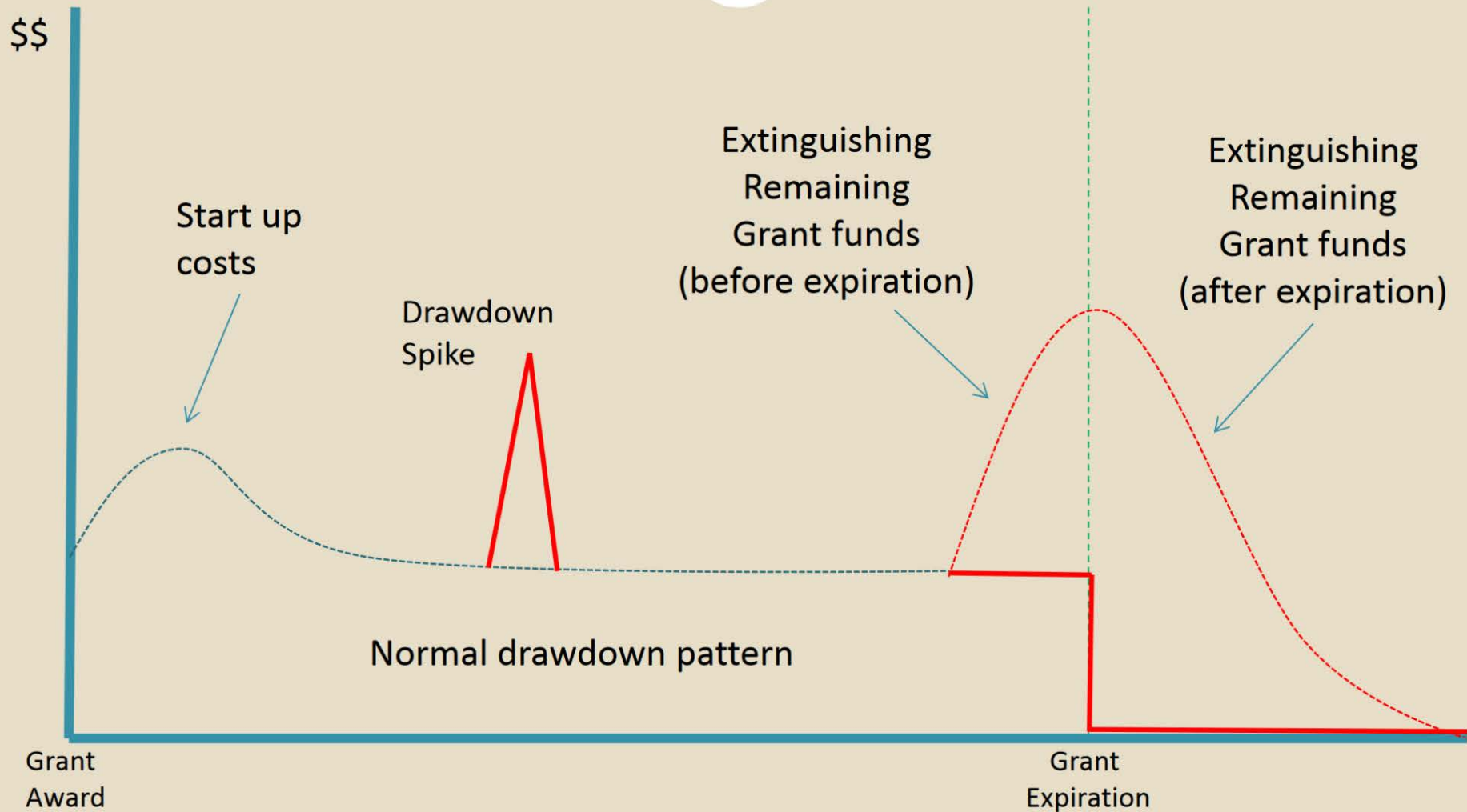


**D A T A   A N A L Y S I S**

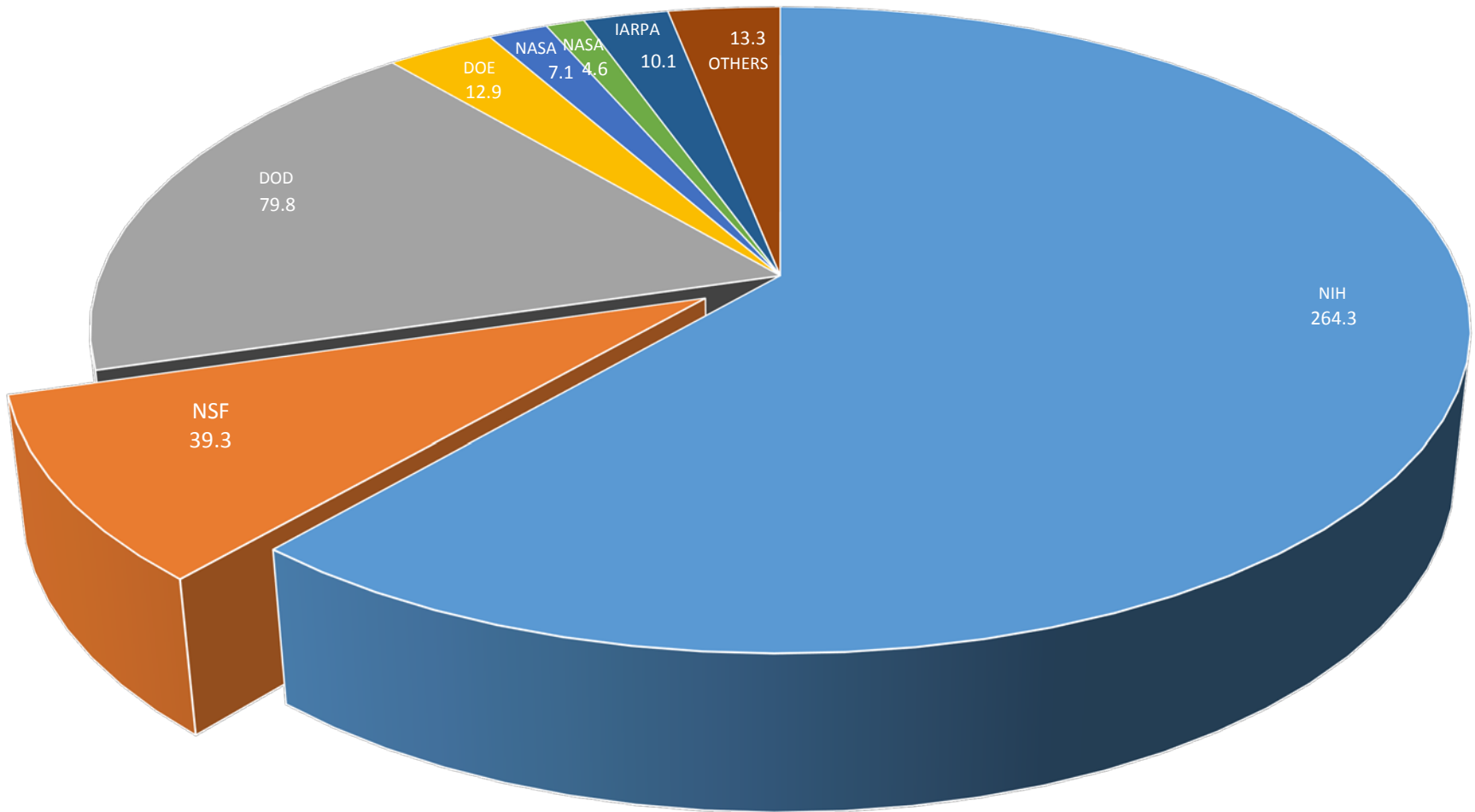


# Anomalous Drawdown Patterns

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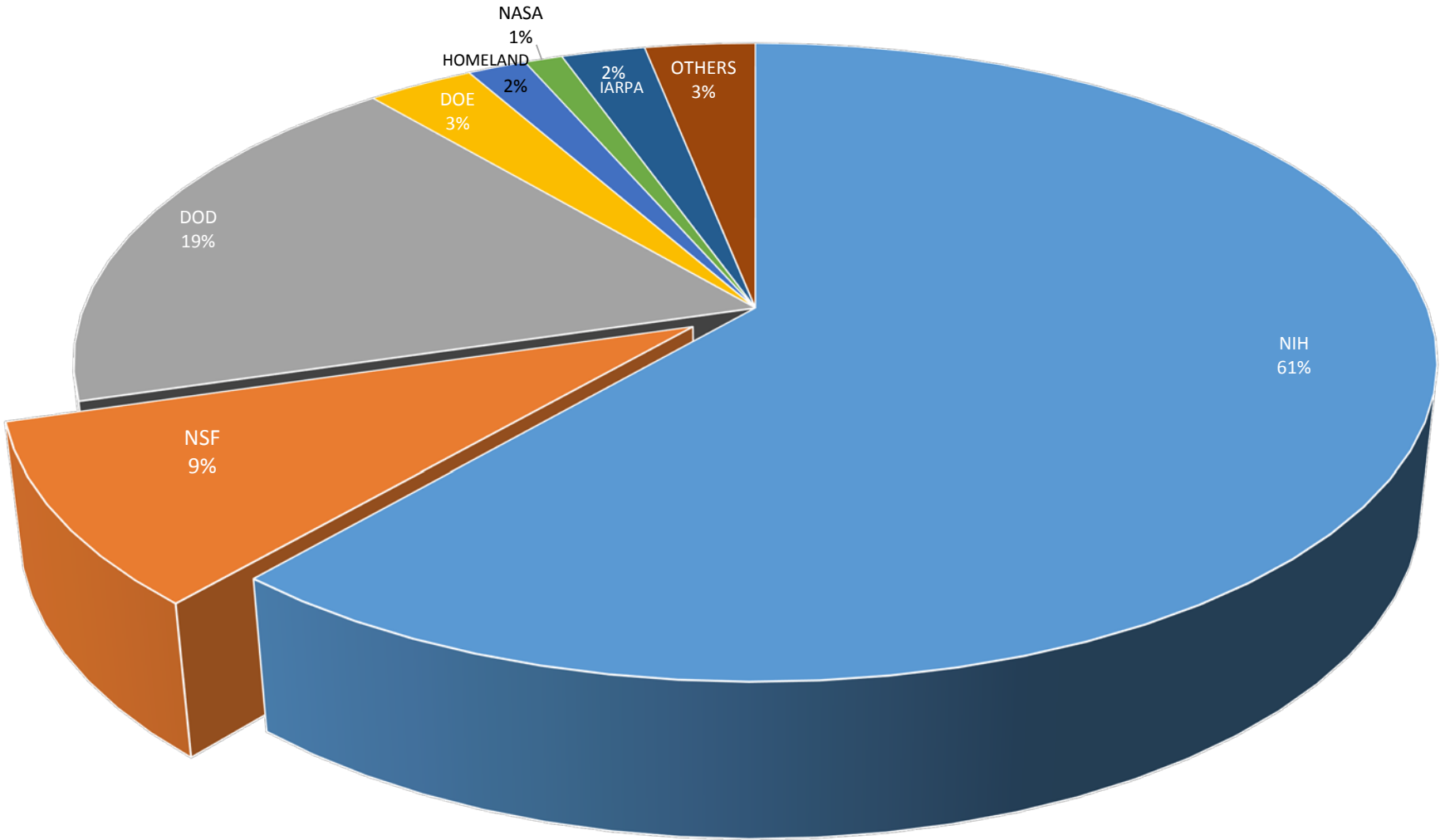


# Expenditures FY14 \$431.4M



■ NIH ■ NSF ■ DOD ■ DOE ■ HOMELAND ■ NASA ■ IARPA ■ OTHERS

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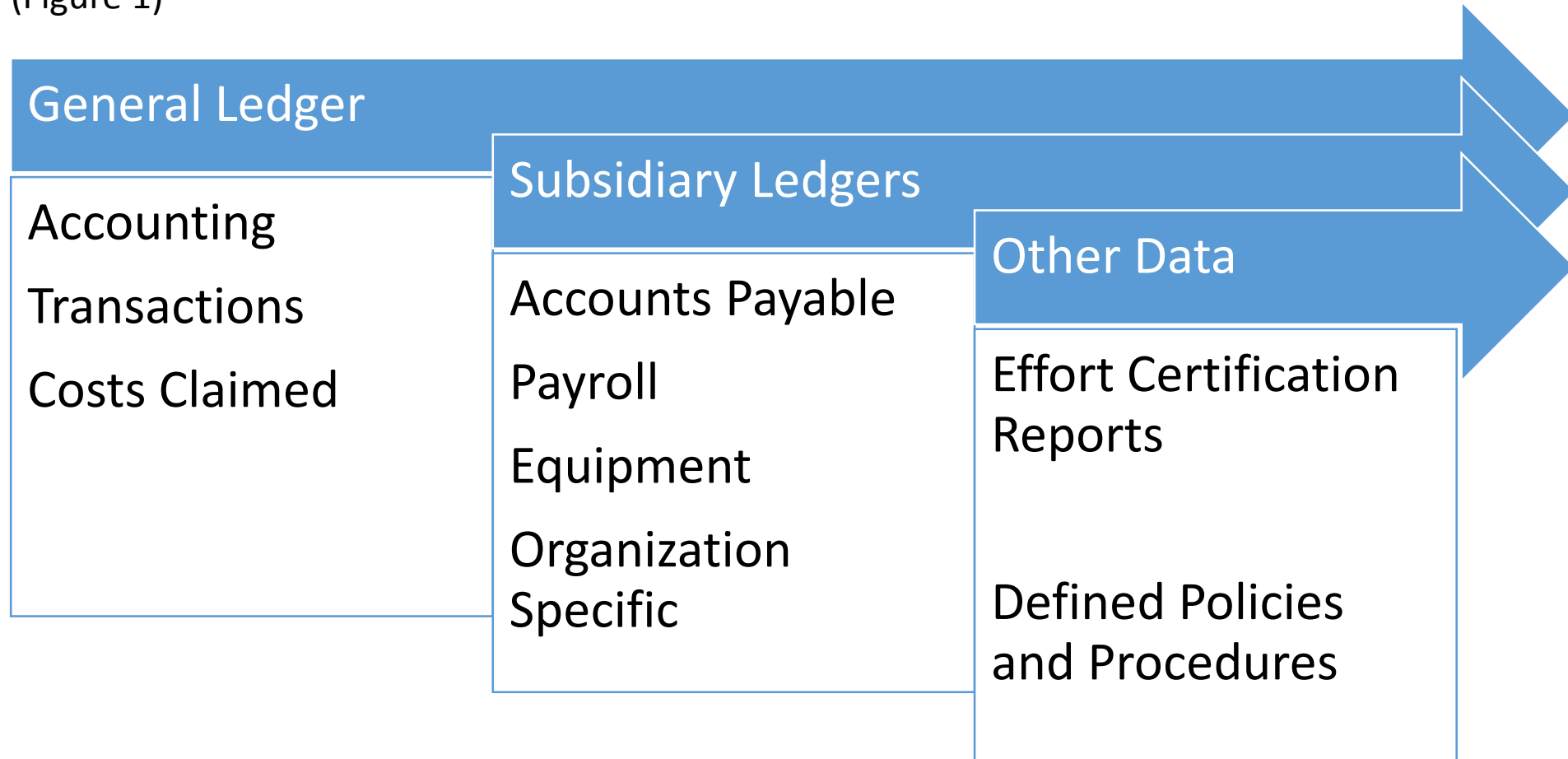
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- What did they look at?
  - Specified time period (USC – Oct 2011 to Sep 2014)
  - Amount in question (USC - \$120M+)
  - System Information
    - Core Systems
      - EFS & Kualu
    - Subsystems
      - PPBS, Workday, DVQE, PO, Reqs, Equipment
  - University Policies and Procedures
  - Data dictionary for all systems
  - Data models, system architecture, data flowcharts (see figure 1)



# Systems Reviewed

(Figure 1)



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- How long does it last?
  - USC – 3+ years and counting
  - Others 4-6+ years
- Who is involved? (@USC)
  - Office of Financial Analysis (my office)
  - Office of Compliance
  - Ernst & Young (Internal Audit)
  - Outside Counsel
  - School Administrators/Department Administrators/Faculty
  - Information Technology

# NSF OIG @ USC

## USC Figures

- 3 years of data (Oct 11 - Sep 14)
- Lowest possible level of information
  - 91,948 transactions
    - Actual transactions
    - Corrections
    - Payroll
    - M&S
- 600+ awards
- 120 Million + in total expenditures
- 7 Rounds of data exchange & responses

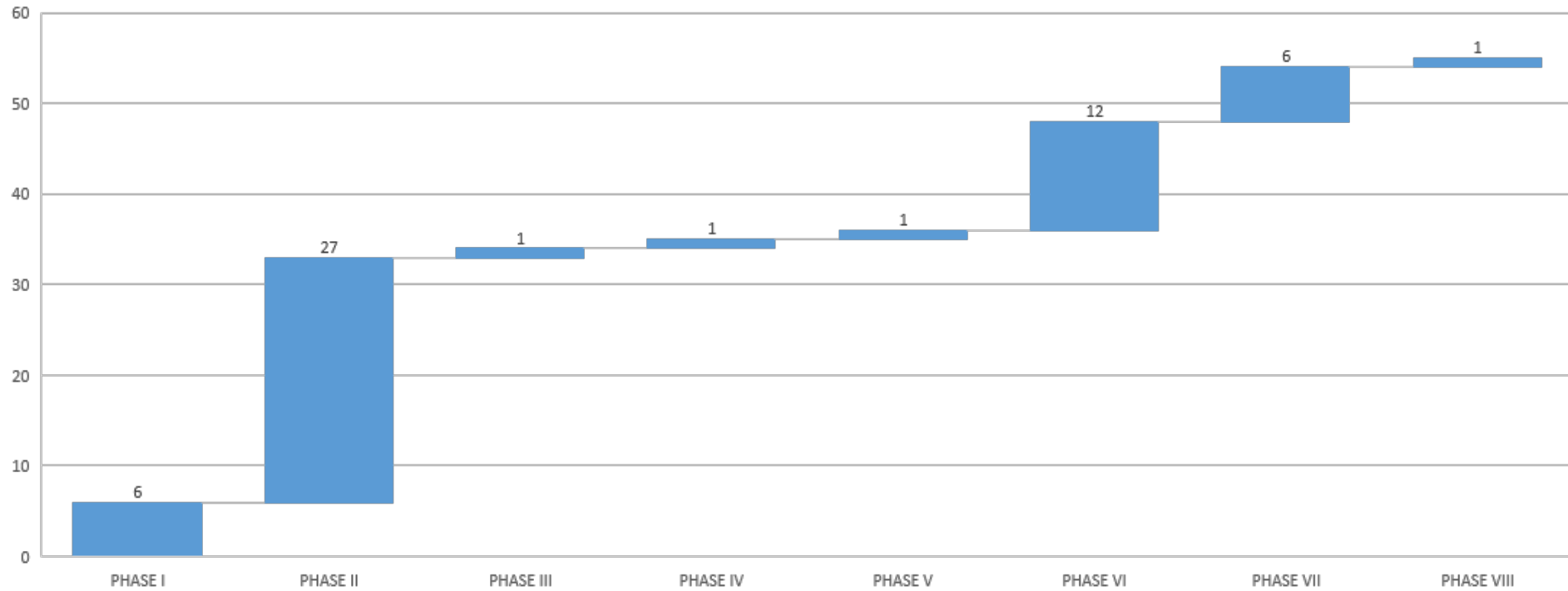
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## USC Challenges

- Major System implementation during timeframe
- Prior system was primarily manual document driven
- New system had plenty of bugs (remember Workday's first few months)
- Few subject matter experts related to system change
- Changing policies as a result of system change
- Managing auditors interpretations and expectations

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NSF OIG Data Analytics Audit Timeframe @ USC



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- Phase I – Data Collection
  - Trial run of data dump
  - GL data dump (see illustration)
  - Feeder system data dump
- Phase II – Selection of High Risk Items for Review
  - First request 250 items
    - Payroll
    - M&S
    - Equipment
    - Travel
    - Cost Transfers

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- Phase II - Selection of High Risk Items for Review (Continued)
  - Second request 55 Items
    - Payroll
    - Travel
    - Participant Support
    - 5 Additional non-transactional questions
- Phase III – Pre-Draft Final (Draft)
  - Review of initial pre-draft report
  - Identify factual inaccuracies
- Phase IV – Draft Final Report
  - Provide university's official response to audit findings on an award by award basis
  - Careful consideration is made as this will make it to final published report

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- Phase V – Final Report Published
- Phase VI – Audit Resolution (Currently at this stage)
  - Make final case to agency to validate transactions
  - Corrective Action Plan
- Phase VII - Post Audit Review
  - Ensure Corrective Action Plan has been implemented as agreed upon.
- Phase VIII – Post Audit Report and Close-out



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- What actually happened behind the scenes
  - Short turnaround timeframes
  - A site visit from auditors
    - Interviews with faculty and administrators
  - Auditors took their time but did not give us enough time to respond
  - Auditors looked at everything (explains why they take their time)
    - Very tedious work
      - Read proposals and amendments
      - Cross referenced all transactions against USC Policies, Agency Policies, Uniform Guidance, others

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- Can we replicate the process in-house?
  - Internal Audit
  - External Audit
  - Consulting Firms
  - In-House development
  - We're good enough already?

# Data Analytics

