Software Engineering Productivity Tools (SWEPT)

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SWEPT Data mart

• Set of data sources pertaining to product, engineering process and engineering organizations
• Provides consistency of data discovery and access across product groups
• Provides a standard platform for creating analytics
• Informs data driven decision making
Current Contents

• Collecting metadata on:
  • Source code
  • Change lists
  • People
  • Daily builds
  • Tasks/Bugs

• and relationships among them
Uses of data – typical questions

- Change data
  - Size, significance, frequency of changes
  - Changed functions, classes, namespaces
  - Executables affected by changes
  - Tests to run on a change; parts of a change without test coverage
- Churn data
- Branch Analysis
  - Code velocity
  - Branching structure
- Ownership
  - Organizational
  - Individual
    - code reviews, ship room,…
- Release Management
  - Dashboard to influence triage decisions
- Risk Analysis
  - Complexity, regression history, coverage %
- QA
  - Test prioritization, redundancy
ENGINEERING ANALYTICS AT BING

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OSD Engineering Fundamentals (EFun)
EFun – Software Engineering @ scale

- Analytics
- Build System
- Code Sharing
- Developer Experience
- Build blocks
- Continuous Delivery

Bing and beyond
Engineering Analytics

• Primary focus on engineer behavior to encourage right behavior and drive better experiences in addition to computing KPIs using past data
  Why?
  • Teams in Bing operate in a decentralized manner and we want to make fundamental changes so that it can up level the whole system

• We treat data as a strategic asset to
  • Validate existing initiatives
  • Support new initiatives
  • Provide direction

• In the past year we have leveraged SWEPT to
  • Come up with new business metrics
  • Deep dive on engineer behavior
  • Come up with new Engineering KPIs
Business metrics

- **Checkin Frequency** (frequent and small)
  - The measurement of gap between the current process and continuous delivery

- **Code Velocity** (time from earliest checkin to going live)
  - Not necessary the quickest, the best. Ideally you checkin and it is shipped the next day
Business metrics

• New hire ramp-up time (time from joining Bing to engineering activities)
  • Time to first checkin
  • Time to reach the checkin maturity level of an experienced engineer

• Bing Engineering Culture study
  • Correlating to new hire ramp-up by geo location
    • Ratio of junior to senior engineers
    • % of org undertaking engineering activities

• Analytics
Role of SWEPT

- Enables us to compute KBIs (Key Behavior Indicators) and KPIs (Key Performance Indicators) in an agile manner
- Provides a common schema and this is allowing us to reuse the analytics work for other parts of the OSD Division (e.g. Ads) and the company