Breaking the circle

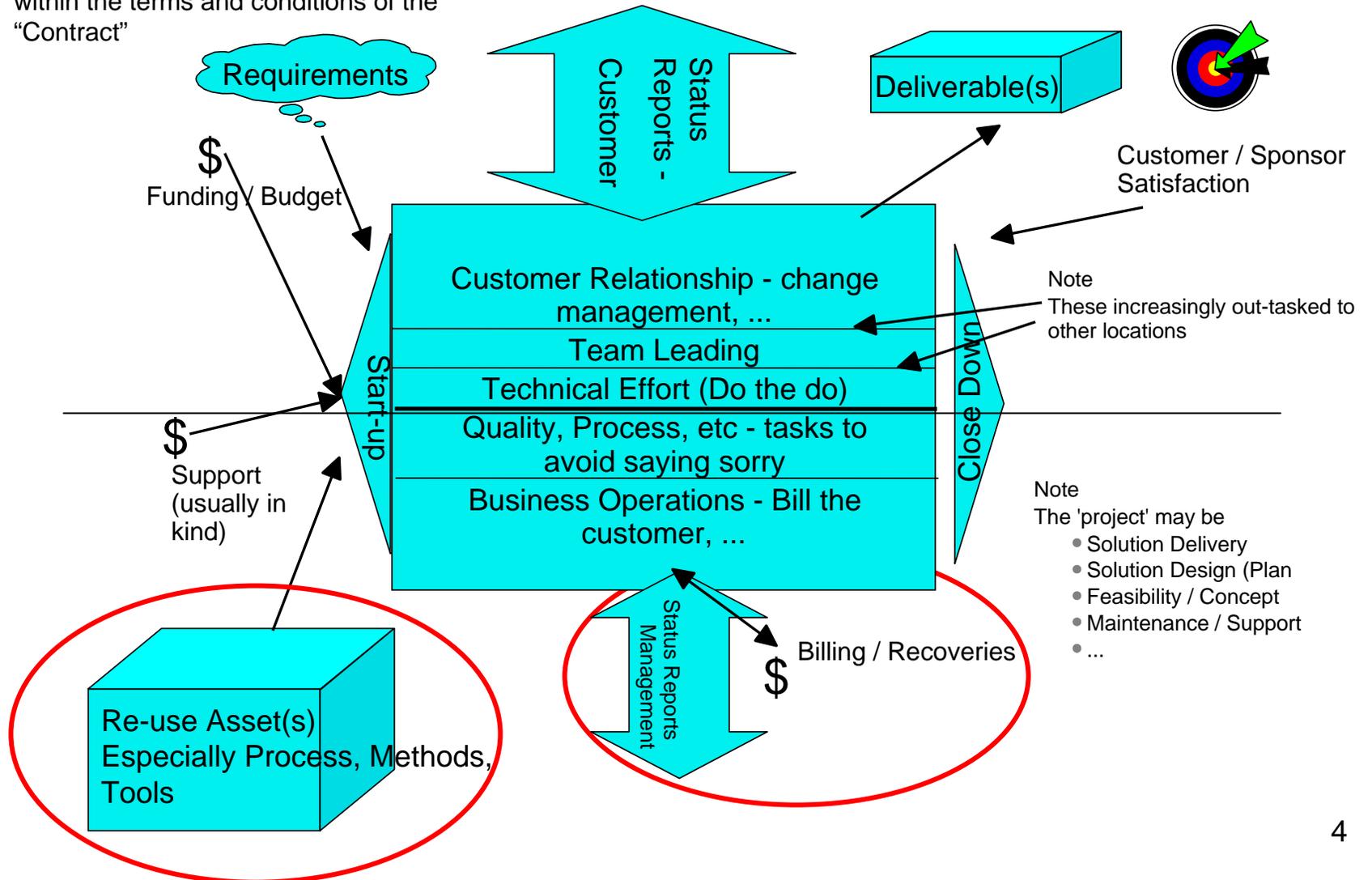## *Peter Thomas*
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Welcome and introductions

- Who am I
- Who are you
- What are we aiming to achieve
  - Many delivery organisations are stuck in a circle of end date driven projects with fixed resource in a culture where the customer and Management want more with each release.
  - The commitments given are a compromise between risk and capability (the combination of process, skill (including motivation), and experience.
  - Breaking the circle can be enabled by measuring what is being delivered and the risk of delivery.
  - Hence an organisations portfolio of projects can be placed into one of four quadrants
    - (relatively) high risk and planned high delivery rate
      These are candidates for management focus to reduce the risk and ensure that future projects for this customer have less scope (de-scoping an existing project is a possible)
    - (relatively) low risk and high delivery rate
    - (relatively) high risk and low delivery rate
    - (relatively) low risk and low delivery rate
      These are candidates for process improvement pilots; the proven processes are then more easily adopted by other projects in the other quadrants.

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Learning Objectives

- Understand the concepts of risk and project delivery rate
- Understand methods to consistently asses project risk
- Understand methods to calculate the project delivery rate from key project work products
- Be able to identify candidates for management focus or process improvement based on project delivery rate and risk
- Understand how management focus or process improvement can break the circle of end date driven projects with fixed resource in a culture where the Customer and Management want more with each release.

Project Overview

The goal is to deliver on time, on budget, with required scope and quality of deliverable (s) within the terms and conditions of the "Contract"

Requirements

Status Reports - Customer

Deliverable(s)

$ Funding / Budget

Customer / Sponsor Satisfaction

Customer Relationship - change management, ...

Team Leading

Technical Effort (Do the do)

Quality, Process, etc - tasks to avoid saying sorry

Business Operations - Bill the customer, ...

Start-up

Close Down

Note
These increasingly out-tasked to other locations

$ Support (usually in kind)

Note
The 'project' may be
- Solution Delivery
- Solution Design (Plan
- Feasibility / Concept
- Maintenance / Support
- ...

Status Reports Management

Billing / Recoveries $

Re-use Asset(s) Especially Process, Methods, Tools

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Risk

- Execution of the project may be low or high risk.
  - Analogy risk of falling while riding a unicycle is high unless you are skilled, riding a tricycle is much less of a challenge
- Possible methods of measuring risk
  - Use organisation standard Risk assessment
    - score the number of risks identified
    - optionally weight the risks by impact and likelihood
  - Use the IFPUG General Systems Characteristics Appendix to obtain a score.
    - This list is focused on none technical and quality requirements rather than project risks however it gives a score to measure the risk indirectly.
  - Score the risks in the project risk register regardless of process used to obtain.
    - This has the advantage that projects following a standard Project Management Method will have a list, but its use as a measurement is limited by probable lack of consistency.

Example of IBM's standard Risk assessment – Selecting appropriate project and assessment type gives relevant list of sections & their risk statements

IBM standard Risk Assessment

Project Risk Ratings: **When a risk assessment is completed, the Summary screen will show a risk**

- **score of 1 - 9. Scores of 1-3 are considered low, 4-6 medium and 7-9 are considered high-risk projects. The overall risk assessment is calculated based on the cumulative number of medium, high and exceptional risks that are identified.**

IFPUG General Systems Characteristics

- 14 GSCs, each are rated 0 to 5.
  1. Data Communications
  2. Distributed Data Processing
  3. Performance
  4. Heavily Used Configuration
  5. Transaction Rates
  6. Online Data Entry
  7. End User Efficiency
  8. Online Update
  9. Complex Processing
  10. Reusability
  11. Installation Ease
  12. Operational Ease
  13. Multiple Sites
  14. Facilitate Change

Sample GSC:

- Data Communications
- The data and control information used in the application are sent or received over communication facilities. Terminals connected locally to the control unit are considered to use communication facilities.
- Score as:
0 Application is pure batch processing or a stand alone PC.
1 Application is batch but has remote data entry or remote printing.
2 Application is batch but has remote data entry and remote printing.
3 On-line data collection or TP (teleprocessing) front end to a batch process or query system.
4 More than a front-end, but the application supports only one type of TP communications protocol.
5 More than a front-end, but the applications supports more than one type of TP communications protocol.

Data Communications - Hints

Protocol examples include FTP, dial-up, Token Ring, Ethernet, SNA, TCP/IP, IPX/SPX, HTTP, XML, WAP, NTP, ICQ, and NETBEUI. This list should *not* be considered exhaustive.

- Rules 1 & 2
  - Remote devices might include 3270 terminal connected to a mainframe computer that allows only simple edits (numeric vs. alpha), or printers connected via parallel port (the user can specify where to direct the output).
  - The entry of data does not involve reading or writing directly to an ILF. Data are entered on-line, but the transactions are stored in a temporary file for batch update of ILF(s) at a later time.
  - The entry of data does not involve reading or writing directly to an ILF.
- Rule 3
  - Simple business rules and minimal edits (e.g., alpha/numeric, range check, required data, etc.) may be performed. When this data is eventually processed by the application, additional edits are performed.
  - The entry of data does not involve reading or writing directly to an ILF. Data are entered on-line, but the transactions are stored in a temporary file for batch update of ILF(s) at a later time.
- Rule 4
  - Data for the application is collected and may directly update ILF(s) or be stored for future processing using an input device, which performs edits based on business rules.
  - Only one communication protocol is used. Typically, when this data is processed by the application, no further edits are required.
  - The entry of data involves reading or writing to an ILF.
  - For example, client-server data entry or Internet data entry, but not both.
- Rule 5
  - Same as 4, however, data collection is performed using multiple telecommunication protocols.
  - For example, client-server data entry and Internet data entry of the same transaction.
- Typically,
  - Batch applications receive a score of 0 to 3
  - On-line applications receive a score of 4
  - Web-based applications receive a score of 4 or 5
  - Real-time, telecommunication, or process control systems receive a score of 4 or 5

Project Risk Register

- Organisations use a variety of project management methods to capture, track, and manage changes, issues, and risks.

- Risks can be viewed as changes or issues that have yet to happen.

- Previous projects are a valuable source of ideas for risks as are the opinions of the project team.

Project Delivery Rate

- Amount of delivered material divided by effort to produce it.
- One method of measuring delivered material is Function Point (FP) Analysis.
  - Using information from key work products, in particular the system context diagram, the logical data model, and the use cases, or their equivalent, the FP Analyst identifies data owned and maintained and elementary processes.
  - Following the rules of the method, a count is obtained which is an index of size.

What are function points

- A dumb size measure
  - Analogy – square feet of wall for decorating
  - Function point analysis is an ISO standard software functional size method for measuring software development from the user's point of view.
  - a quantifiable index for the size of:
    - an application
    - a development project
    - an enhancement project

- From the user's perspective
  - Looks at when we cross the program boundary

- independently of Technology.

FPA - overview

Count Data Functions

Count Transactional Functions

Determine Unadjusted Function Point Count

Identify Counting Scope and Application Boundary

Determine Type of Count

Calculate Adjusted Function Point Count

Determine Value Adjustment Factor

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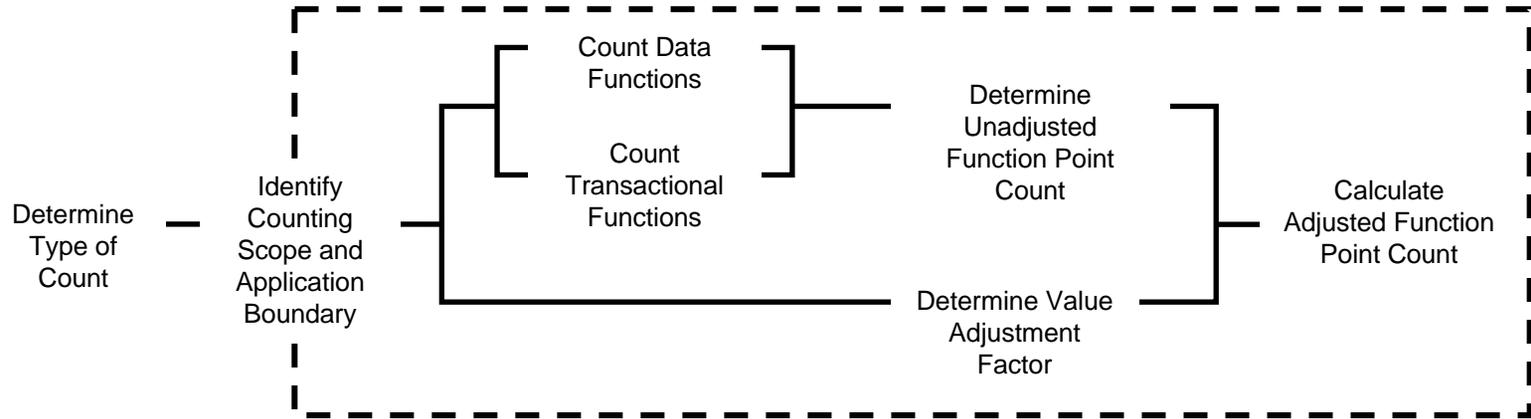
FPA - process

- Determine the purpose (in this case to identify the quadrant for the project), scope (needs to match the hours and the risk assessment), & boundaries (Is the project one or more independent software components)
- Capture logical files that are managed by the program
  - Describes files used by the program
- Capture the Transactions
  - Fields
  - Files referenced
- Refine for your particular program (General Systems characteristics)

1. Look at use case, design spec, or working panels
2. Fill in a spreadsheet or document in the tool
3. Run the math
4. Review with the team (architects, senior techies, …)
5. **Iterate!**

For Planned / ongoing delivery rate, don't need 100% accuracy

Patterns (tips)

- Use skilled people – requires interviewing skills and work product expertise.

- Don't attempt over precision
  - Work with the expected value of perfect information by making appropriate assumptions

- Trying to measure function points will reveal how good your requirements baseline is.

- When you measure items you begin to drive behavior. Typically, introducing function point delivery tracking causes much smarter tracking of hours.

- Make project specifications and documentation FP friendly

Function Point Myths and Realities
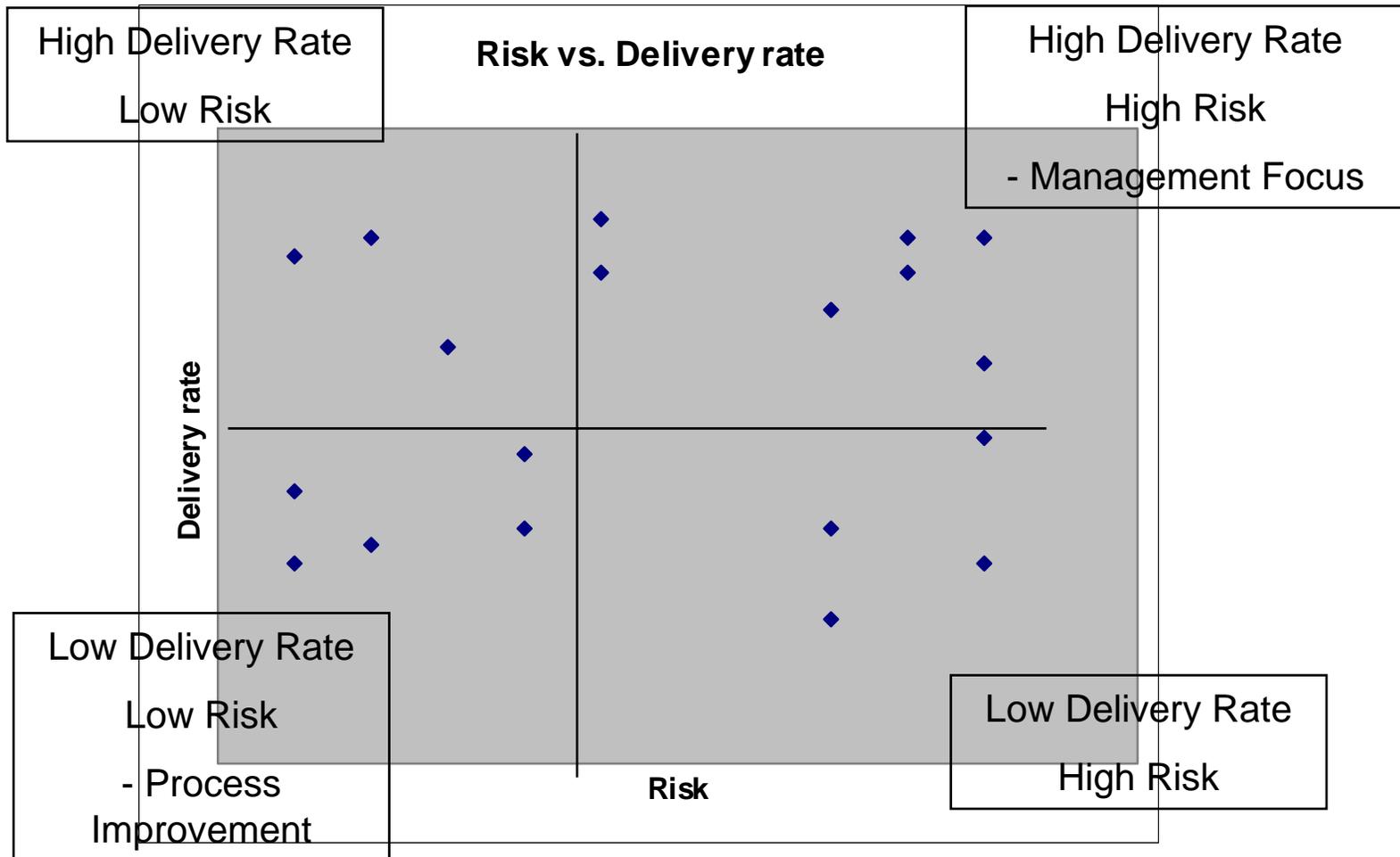
- Myth
  - It's rocket science (false!)
    - !! Truth: If you don't need super precision for billable FP, estimates are easy – a few hours. Formal costs more (1-3% of overall effort).
  - Subjective (false!)
  - Just for techies (false!)
  - Can only count product "as built" (false!)
    - Truth: Can count starting at early high level requirements
  - Primarily used for estimation (false!)
    - Truth: It's for validation of your efficiency, number of test scenarios, planned defects, total hours
  - It's a single productivity measure (false!)
    - Truth: They don't measure effort. But there are ratios that allow you to convert

- Reality
  - It's a process (that yields a number)
  - It IS reliable and repeatable, when you follow the rules
  - Enterprise wide applicability
  - Has many uses (anywhere you need a normalization measurement)
  - Require companion measures – in this case Planned hours

Measurement Analysis

- With the data for risk and FP counts it is a simple matter of plotting them (using your favourite spreadsheet) and deciding what the clip levels should be for the quadrants.

- These are relative measurements so the actual clip level values are not of themselves significant.

- Goal here is objective project selection.

Risk vs. Delivery rate

High Delivery Rate
Low Risk

High Delivery Rate
High Risk
- Management Focus

Delivery rate

Low Delivery Rate
Low Risk
- Process Improvement

Low Delivery Rate
High Risk

Risk

Management Focus

- If you keep doing what you're doing then the outcome will be the same, low morale, increasingly dissatisfied customers etc.

- Priorities and increased cost to fund higher skill, risk mitigation, etc. can only be sanctioned to achieve an overall improved situation by management

- Knowing why the project is high risk enables actions to be agreed to mitigate those risks.

  - Examples rather than assigning the senior PM to the Clients pet project, use them to provide coaching to the PMs.

  - Provide additional project office staff to enable Earned Value to be tracked to give early warning.

Process Improvement

- Is defined in many ways, in this context it is managing change in an evolution rather than revolution method to provide deployment of methods, tools, etc. along with education and most importantly support to project managers.
- In an organisation one team has to take the pain of being the early adopters to make it quicker and easier for other teams to change.
- CMMI, ITIL, Lean Sigma all have process improvement strategies.
- Doing anything with folks in the organisation who have a relatively easier prospect of achieving their commitments will enhance the organisation capability.

Conclusion

– Breaking the circle of end date driven projects with fixed resource in a culture where the customer and Management want more with each release can be enabled by measuring the risk of delivery what is being delivered to focus management attention and candidates for process improvement.

– This is an opportunity to raise the profile of Function Point Analysis in the organsation.