The Core Structure of TOC Thinking Processes and their Applications to Improve Systems

(The "U" Shape)

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the Kyushu chapter, the Society of Project Management (SPM)

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The Managerial Challenge of Analysis and Solution

Manager: The role of a manager is to ever improve the performance of the system under their responsibility

To achieve that a manager needs to have the right mind-set (paradigm), knowledge, skills and know-how aimed at **continuous improvement**.

The Challenge :
   The ability to see the whole picture and all the details at the same time

Improving with TOC

TOC provides the way to identify and provide **what is missing** in the pursuit of a significant growth of any system

Problem

WHAT to change?
Pinpoint the core problem

Solution

WHAT to change TO?
Construct simple practical solutions

Implementation

HOW to cause the change?
Induce the proper people to make the change (to invent such solutions)

POOGI

What creates POOGI?
Institute a process that facilitates continuous improvement

A Comprehensive Logical Tool for Analysis and Solution

We need a comprehensive logical tool that will enable us to structure our thinking and will provide us with the ability to record our analysis and understanding of any solution for any problem (based on Convergence and Local&Global)

First of all it should be a mechanism to communicate to ourselves and thereafter – a mechanism to work together with our team to achieve the desired improvement (based on Respect)

In the end of the day – our ability to implement any solution depends on our ability to motivate and enthuse our team to collaborate and contribute to making it happen.

We need a tool to help us to become good leaders that professionally manage the team toward better performance of the system?
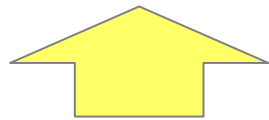
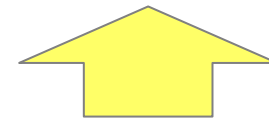# Understanding the Problem & Developing the Solution

Current Reality

Future Reality

| Low Performance Measurements | → | High Performance Measurements |

↑ ↑

| GAPS and Gap Analysis | → | • Elements of the solution
• Closing the Gaps
• Logic of the solution |

↑ ↑
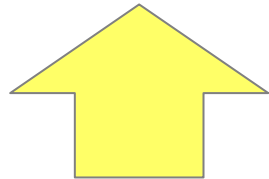
| Core Problem | → | TOC direction of solution |

Understanding the Problem

Current Reality

Performance Measurements

↑

GAPS
and
Gap Analysis

↑
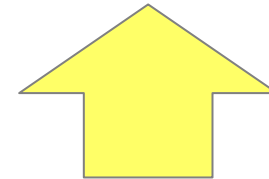
Core Problem
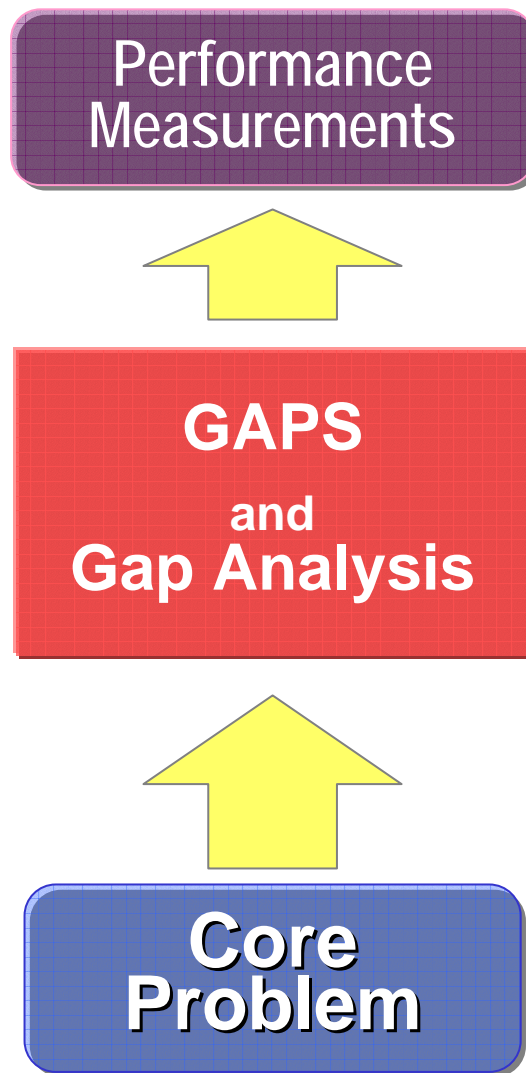
Performance Measurements must:

- Provide yardstick to state how well the system is performing

- Provide a bridge to check the impact of local actions and decisions on the global performance of the system
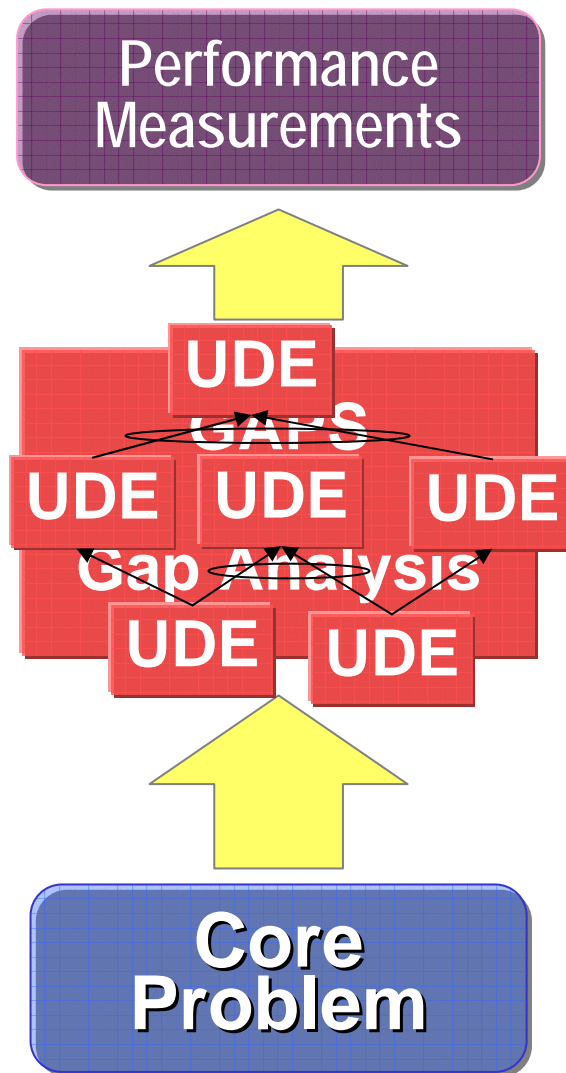
In the current reality – the level of performance is unsatisfactory
Or
There is a strong belief that the performance can be significantly higher

Understanding the Problem

Current Reality

Performance Measurements

UDE

GAPS

UDE   UDE   UDE

Gap Analysis

UDE   UDE

Core Problem

Gaps – facts and entities from reality that explain why it is so difficult to achieve the higher level of performance measurements
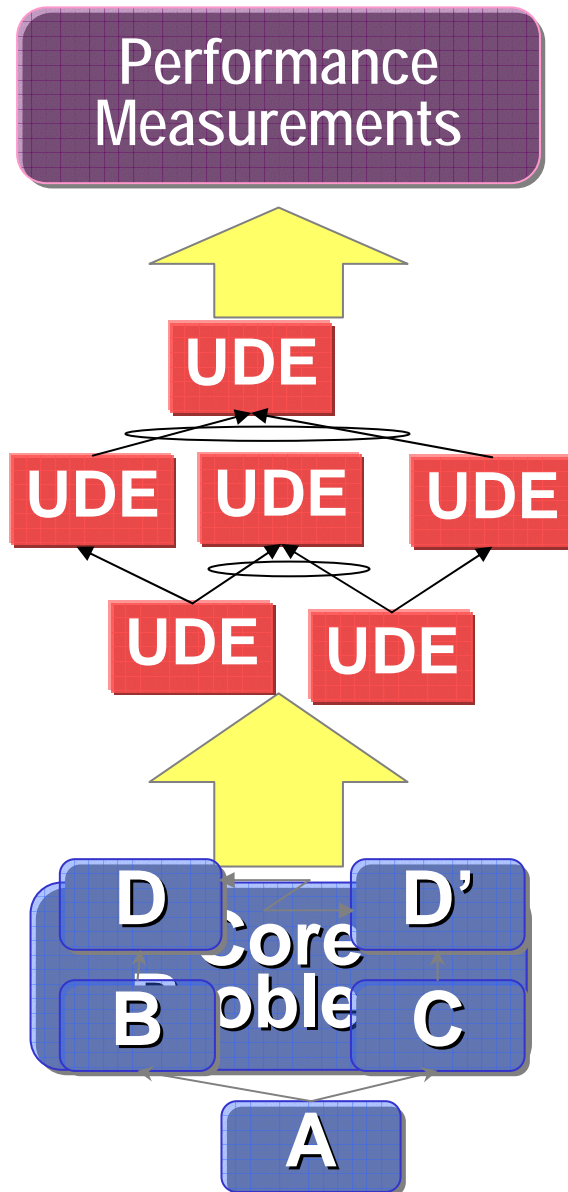
They are called – UDEs

Un-Desirable Effects

The Gap Analysis connects the UDEs to each other and explains the current level of the performance measurements

Understanding the Problem

Current Reality

Performance Measurements

UDE

UDE UDE UDE

UDE UDE

D   D'
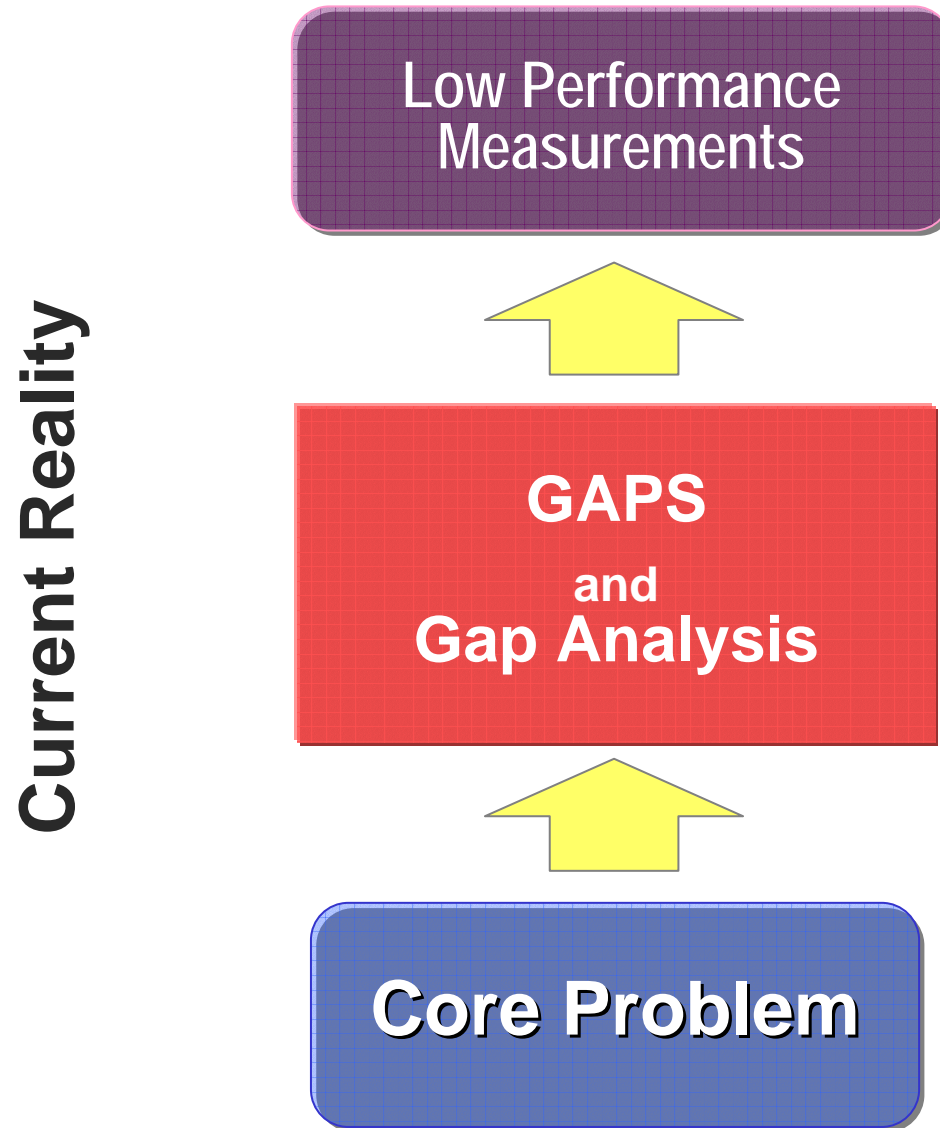
Core Problem

B   C

A

Core Problem reveals the logical reason for the existence of all the Gaps/UDEs

It can be expressed through:

- **Erroneous Assumption**

or

- **A conflict between two major ways of managing (Tactics)**

or

- **A conflict diagram - Core Cloud**

What to change?

Current Reality

Low Performance
Measurements

⬆

GAPS

and
Gap Analysis

⬆

Core Problem
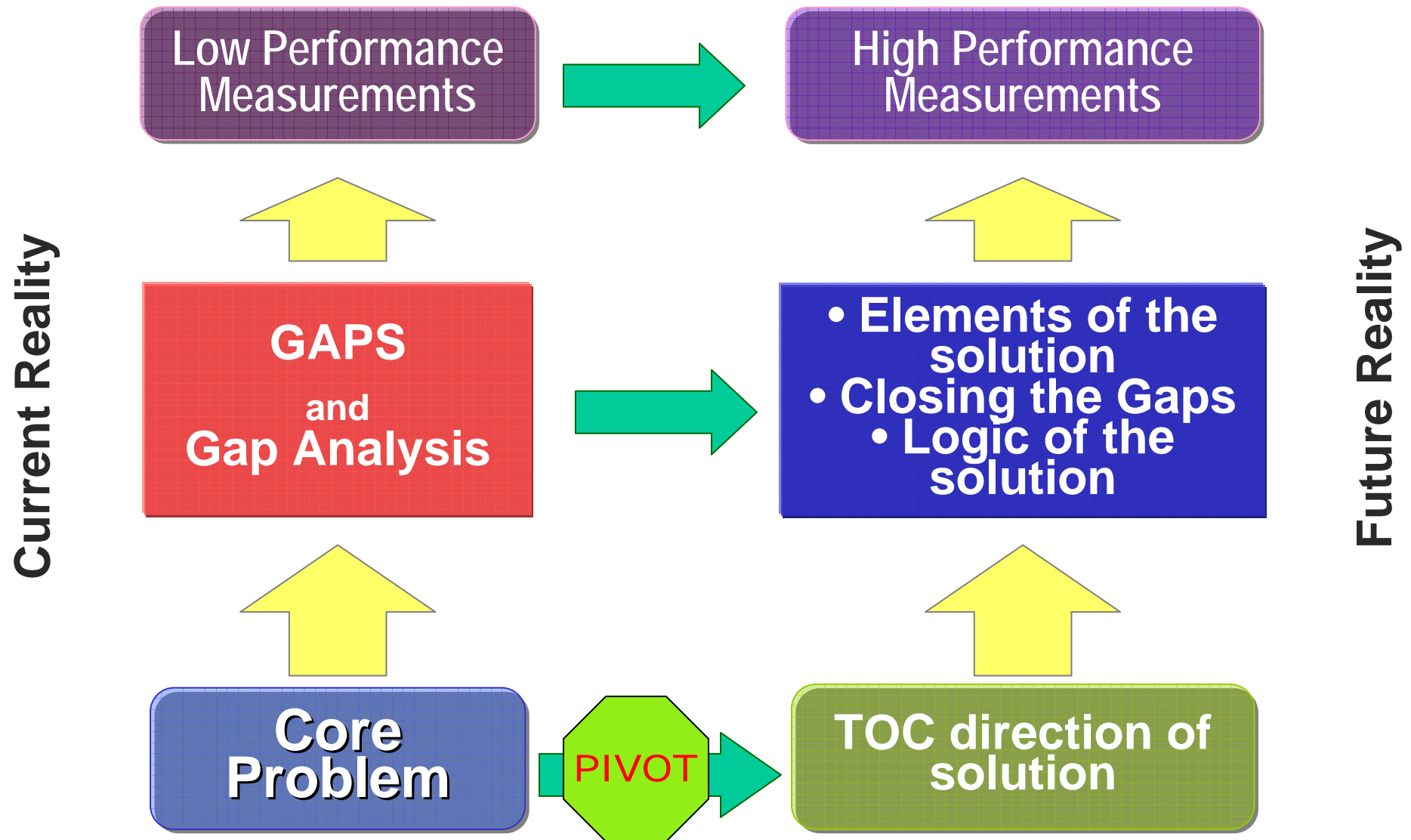
What to change to?

Construct Simple Practical Solutions

We need:

- Replace the core problem with a new Driver

- Construct new features of the system

- Close the Gaps using Cause and Effect relationships

- Improve levels of the system's performance measurements

What to change? What to change to?

Current Reality | **Future Reality**

| Low Performance Measurements | → | High Performance Measurements |

↑ ↑

| GAPS and Gap Analysis | → | • Elements of the solution
• Closing the Gaps
• Logic of the solution |

↑ ↑

| Core Problem | PIVOT → | TOC direction of solution |

The PIVOT

"If we keep on doing what we are doing – we will continue to get what we are getting"

The Pivot provides the key for the solution - It describes the core of the change. It is like changing the course of a huge ship. It explains what is the different paradigm that is about to be employed to the extent that it will drive the new reality

When recording the TOC Knowledge – the pivot provides the paradigm shift from conventional management to **Management the TOC way**
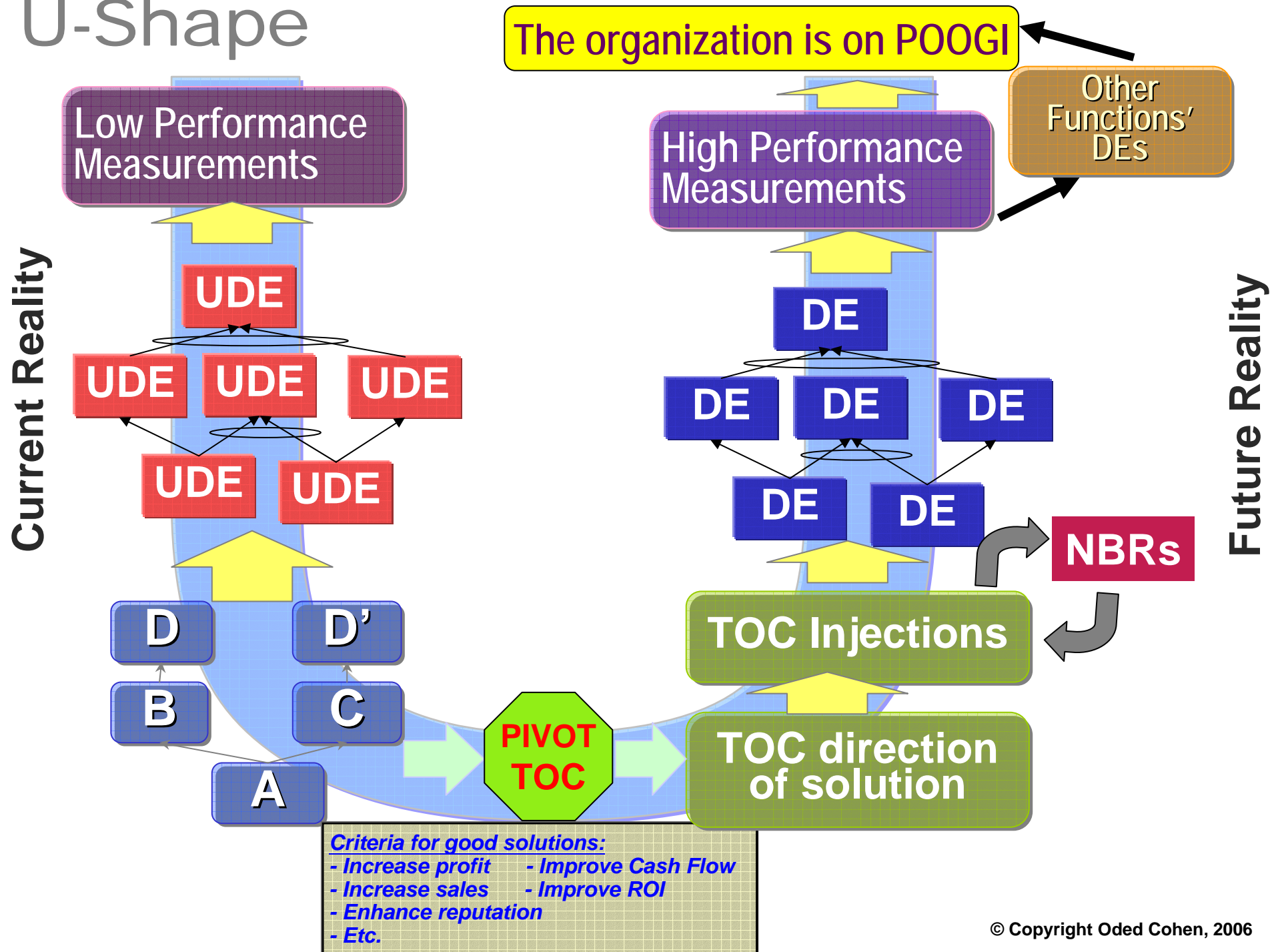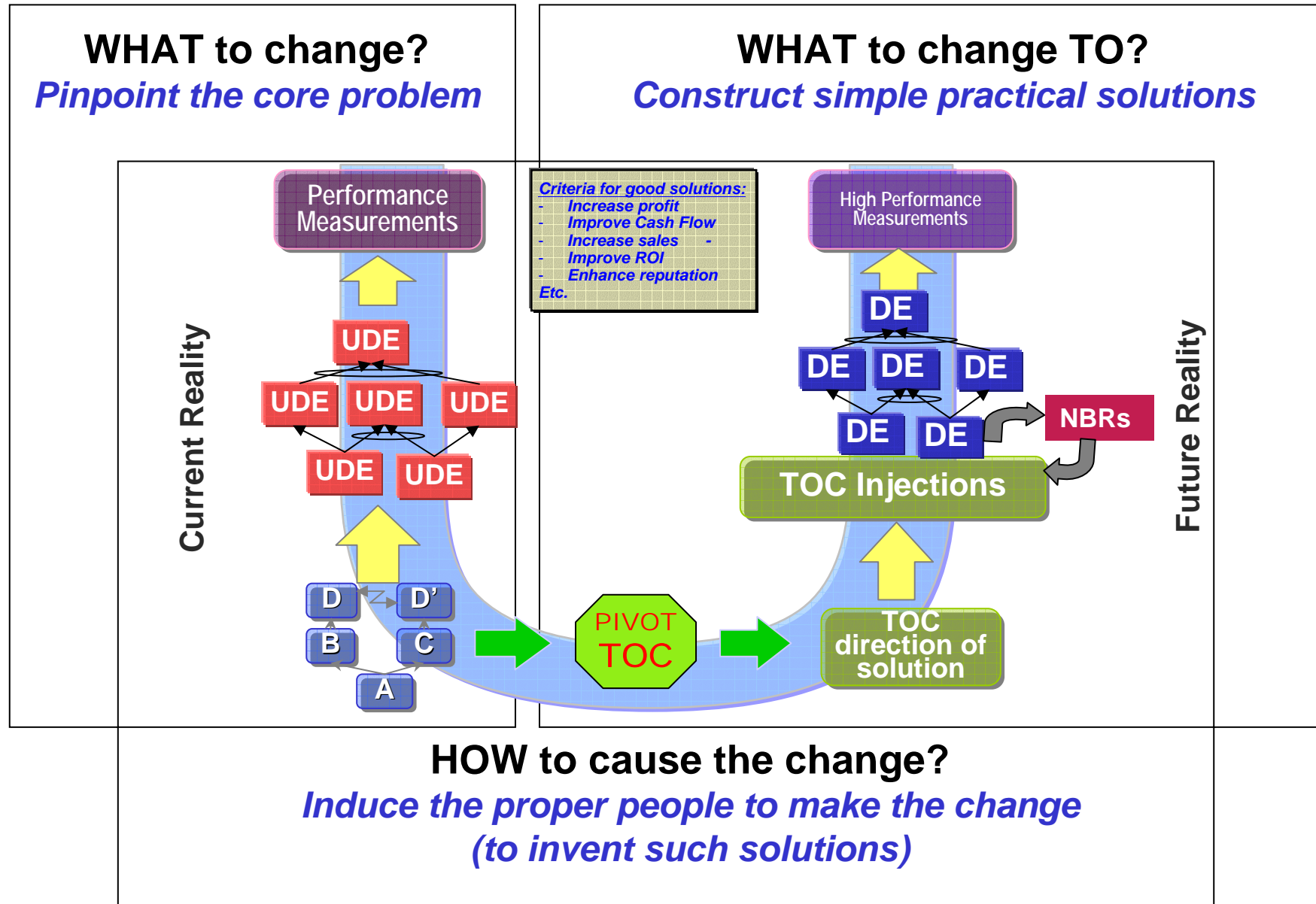
The PIVOT

PIVOT TOC

By accepting TOC as the Pivot for the change a manager is accepting the following approach:

Using holistic processes and rules,

to focus on the few physical & logical Constraints ("leverage points")

as a way to synchronize the parts

to achieve ongoing improvement in the performance of the system as a whole…
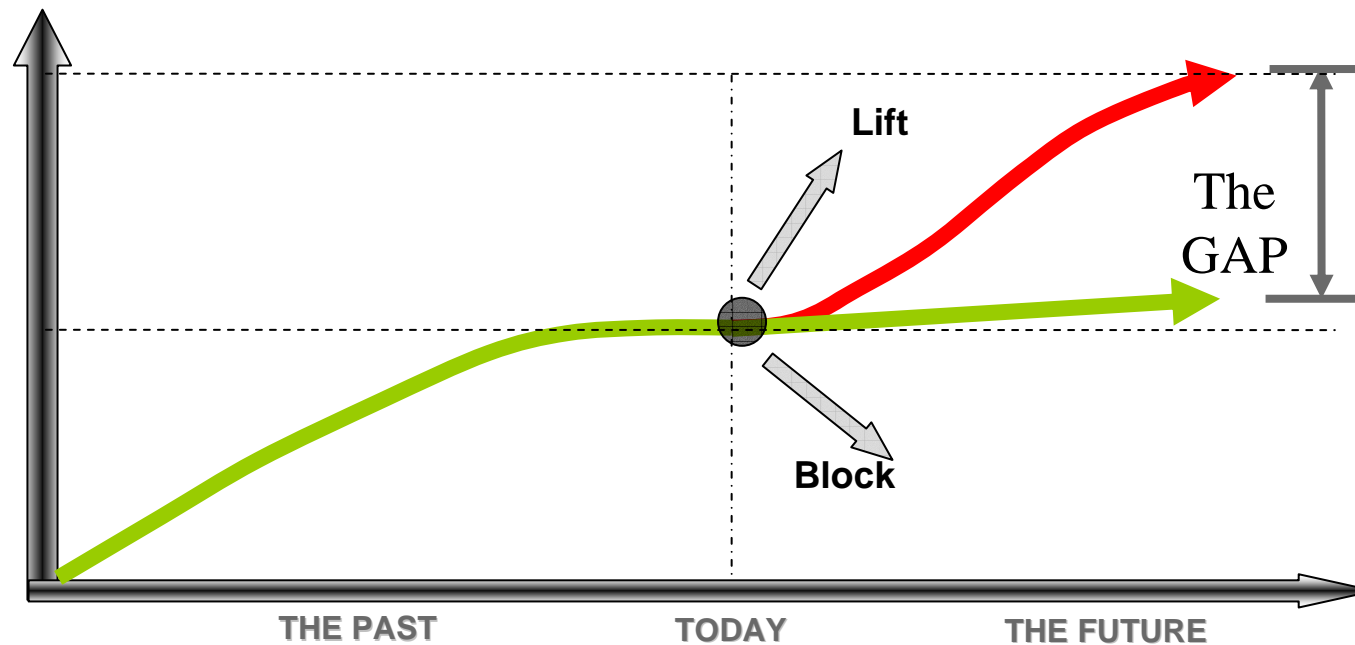
U-Shape

Current Reality

Future Reality

The organization is on POOGI

Low Performance Measurements

High Performance Measurements

Other Functions' DEs

UDE

UDE UDE UDE

UDE UDE

DE

DE DE DE

DE DE

NBRs

D D'

B C

A

PIVOT TOC

TOC Injections

TOC direction of solution

Criteria for good solutions:
- *Increase profit*   *- Improve Cash Flow*
- *Increase sales*   *- Improve ROI*
- *Enhance reputation*
- *Etc.*

The U- Shape - Summary

WHAT to change?
Pinpoint the core problem

WHAT to change TO?
Construct simple practical solutions

Current Reality

Future Reality

Performance Measurements

High Performance Measurements

Criteria for good solutions:
- *Increase profit*
- *Improve Cash Flow*
- *Increase sales* -
- *Improve ROI*
- *Enhance reputation*

Etc.

UDE

UDE   UDE   UDE

UDE   UDE

DE

DE   DE   DE

DE   DE → NBRs

TOC Injections

D   D'

B   C

A

→ PIVOT TOC →

TOC direction of solution

HOW to cause the change?
Induce the proper people to make the change
(to invent such solutions)
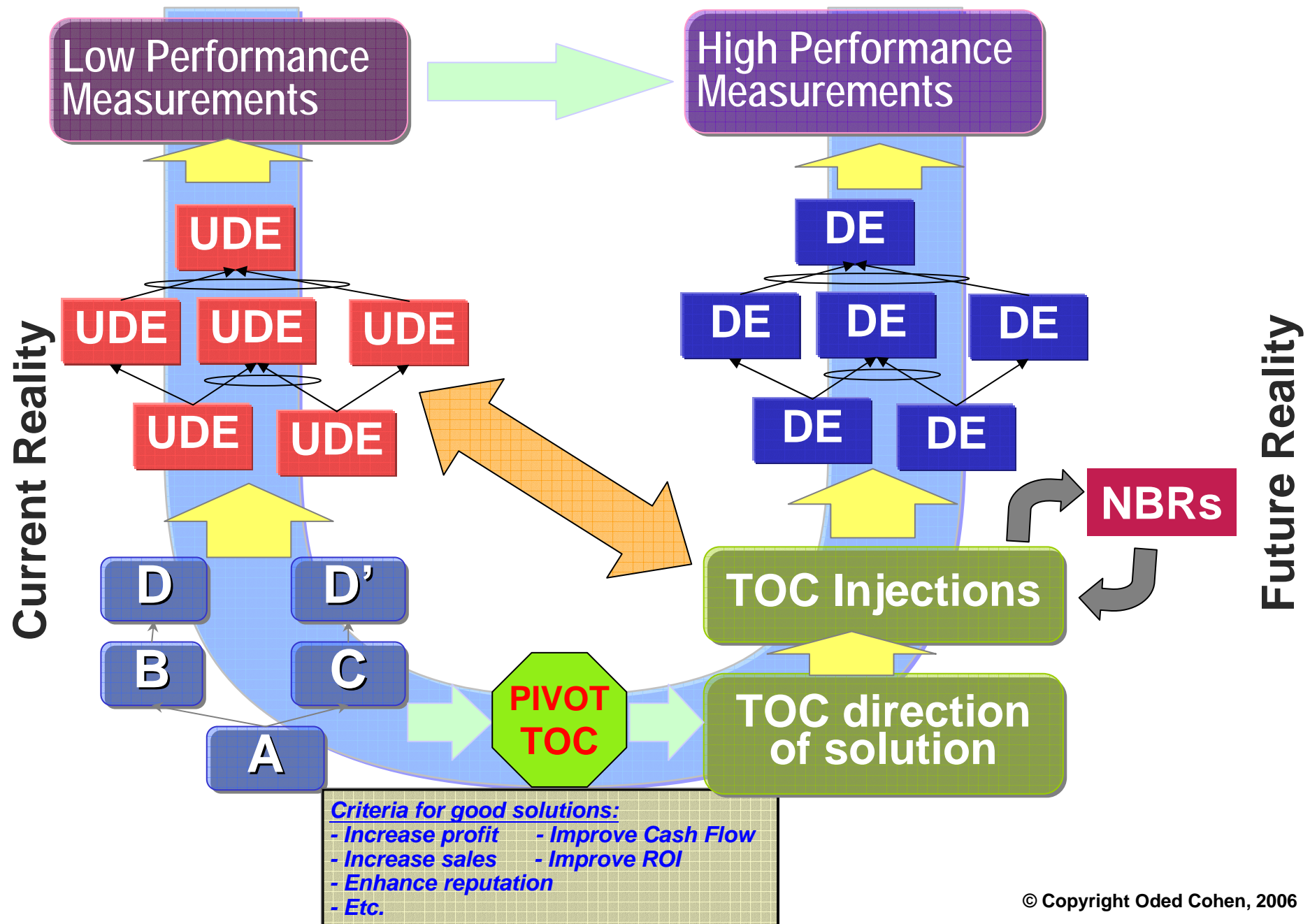
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Example

Using The "U" Shape

For Project Management environment

(Single Project)

What prevents us from achieving the goal?

CONSTRAINTS –
factors or elements that determine
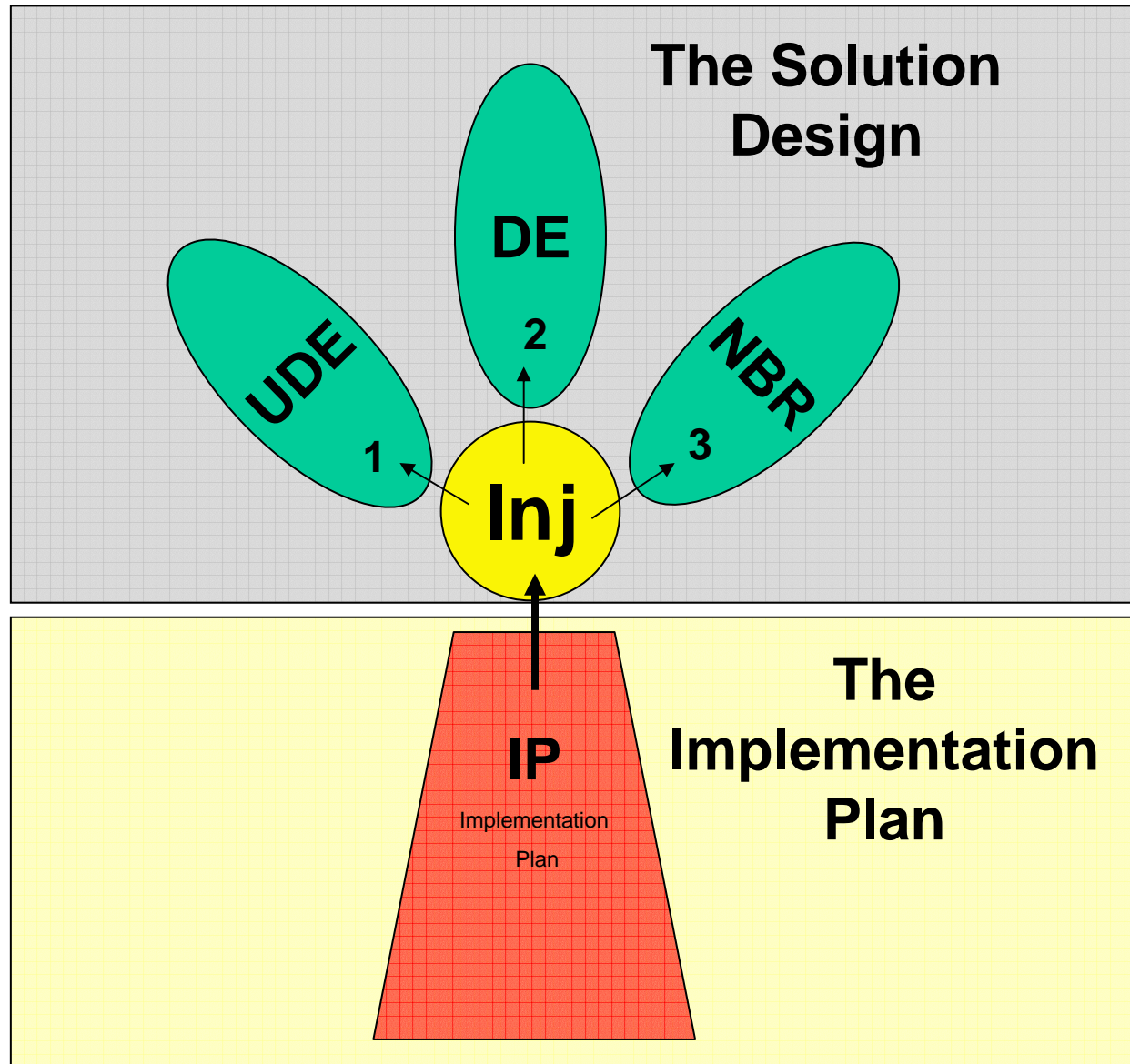how much the system can accomplish

Lift

The GAP

Block

THE PAST   TODAY   THE FUTURE

TOC Detailed Solution Design – we proceed from U-Shape

Current Reality

Future Reality

Low Performance Measurements

High Performance Measurements

UDE

UDE UDE UDE

UDE UDE

DE

DE DE DE

DE DE

NBRs

TOC Injections

D D'

B C

A

PIVOT TOC

TOC direction of solution

Criteria for good solutions:
- *Increase profit*   *- Improve Cash Flow*
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- *Enhance reputation*
- *Etc.*

Injection Flower

What

U

The Solution Design

DE

2

UDE

1

NBR

3

Inj

How

IP

Implementation

Plan

The Implementation Plan

TOC Solution for Single Project Management

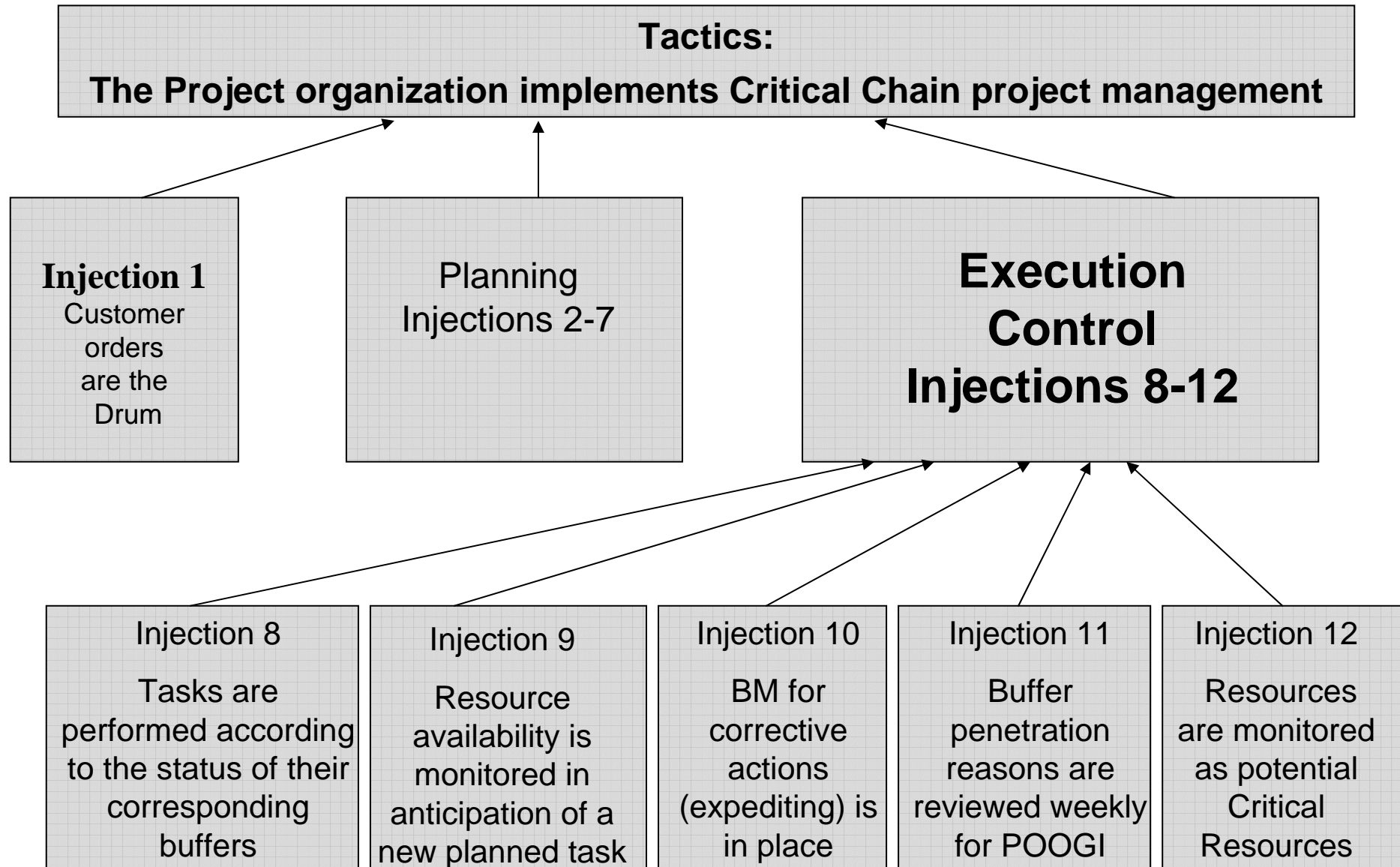**Identify: Customers Orders (Market) are the constraint**

Decide how to exploit: The mechanism for fully Delivering Projects
On Time, In Full & Within Budget is in place:
Single Project Management the TOC Way

Strategy:

The Project is On Time, In Full & Within Budget

Tactics:

The Project organization implements Critical Chain project management

Injection 1
Customer
orders
are the
Drum

Planning
Injections 2-7

**Execution
Control**
Injections 8-12

TOC Solution for Single Project Management

Tactics:

The Project organization implements Critical Chain project management

Injection 1
Customer orders are the Drum

**Planning
Injections 2-7**

Execution Control Injections 8-12

Injection 2

Project Planning Diagrams are in place

Injection 3

Tasks are resourced and estimated for duration

Injection 4

Resource Conflicts are removed from the plans

Injection 5

Critical Chain is determined

Injection 6

Buffers are inserted in strategic points

Injection 7

Estimates of durations are "challenging but achievable"

TOC Solution for Single Project Management

Tactics:

The Project organization implements Critical Chain project management

Injection 1
Customer orders are the Drum

Planning
Injections 2-7

Execution Control Injections 8-12

Injection 8

Tasks are performed according to the status of their corresponding buffers

Injection 9

Resource availability is monitored in anticipation of a new planned task

Injection 10

BM for corrective actions (expediting) is in place

Injection 11

Buffer penetration reasons are reviewed weekly for POOGI

Injection 12

Resources are monitored as potential Critical Resources

Managing Single Projects the TOC Way

The Strategy:

The Project is on time, in full & within budget

The Tactics:

The Project organization implements Critical Chain project management for planning as well as for the control of the execution

Project Management Injections Summary

1. Customers orders are the Drum

Planning Injections

2. Project Planning Diagrams are in place
3. Tasks are resourced and estimated for duration
4. Resource Conflicts are removed from the plans
5. Critical Chain is determined
6. Buffers are inserted in strategic points
7. Estimates of durations are "challenging but achievable"

Execution Control Injections

8. Tasks are performed according to the status of their corresponding buffers
9. Resource Availability is monitored in anticipation of a new planned task
10. BM for corrective actions (expediting) is in place
11. Buffer penetration reasons are reviewed weekly for POOGI
12. Resources are monitored as potential CR – Critical Resources
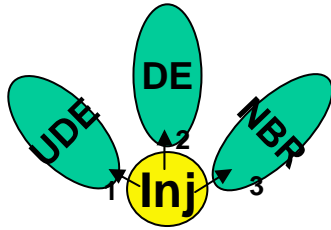
What

The Company has to establish reliability in the market place by ensuring on-time delivery of the existing open projects.

More and more projects have to be completed and delivered on time. In the transition fewer and fewer projects are late and for less time.

Lateness of projects have two aspects – the value of the late project and the number of days it is late. For that we need to establish T$D – **Throughput Dollar Days** - to measure the depth of lateness and to strive for zero T$D

The mindset within the project environment is that Customers orders are the prime driver for managing projects and dictate the project planning and the control of the execution.
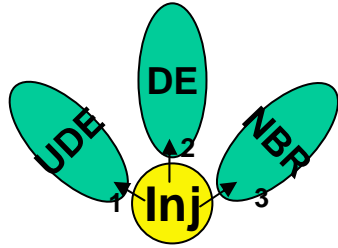
Typical Relevant UDEs

1. We have too many cost overruns against budget

2. Existing projects are disrupted by 'extra work'

3. Many projects take longer than expected

4. We often struggle to hit intermediate deadlines

5. Revisions for late changes to the scope hold us up

6. Top management is under pressure to add more resources
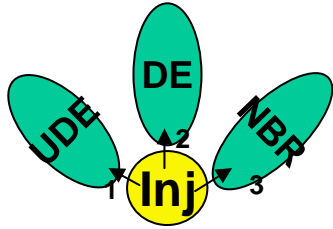
Current Reality (questions to be asked to validate the UDEs)

Current on-time delivery – How many projects are delivered on time? What percentage? How many were delivered as per the ORIGINAL date requested by the customer?

Damage to the customer – What are the difficulties that were caused to the customers (internal or external) due to the lateness of the projects?

Perception of the market – How does the market perceive the company in terms of reliability performance? Does the company get new customers and how difficult is it to retain existing customers?

Damage to the company – Are there any penalties associated with late deliveries? How much money has the company lost due to late delivery?

Expediting – How many managerial efforts, negotiations and extra expenses are associated with trying to meet the project due dates?

Quality problems - Because of constant pressure to rush the delaying projects are there situations by which quality or features are compromised?
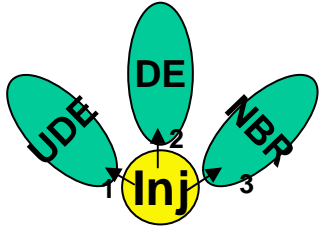
The Desired Effects of implementing Injection 1

- Established reliability by on-time delivery of projects
- Improved focus due to clear measurement of the magnitude of lateness of projects
- Improved project planning and execution control by knowing the status and the position of every project
- Less need to expedite
- More stability of the process
- Increased profitability
- Improve communication with customers, clearer and more reliable information about the progress
- Potentially more sales
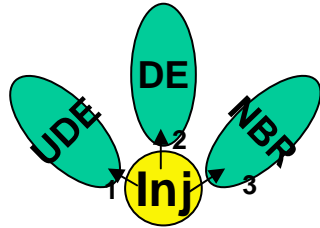
Potential NBR

Even though the injection is critical for the well being and the growth of the company – it can happen that managers and employees may lose their intuition about the new environment (after the implementation) and may drop important issues that they pay attention to today. The Current reality is run be PMB – Policies, Measurements and Behaviors. It may be risky to lose what has been developed over the years.

Suggestion: Listen to the people and record any concern that is dealing with the PMB. Carefully examine the formal and the informal communication regarding the performance of the projects . Many companies have KPI – Key Performance Indicators. Some have even a daily Scorecard. Find them and gradually move them to fit the market lead mind-set.

Re-enforcement of Injection 1 is critical!

Injection 1
Customers orders are the Drum

Inj

IP
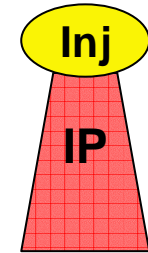
How - DELIVERABLES:

T$D report is available weekly

- T$D – Throughput Dollar Days - collection and analysis are established for measuring reliability of the company in DDP – Due Date Performance - and for monitoring the progress of the change implementation.
- T$D is displayed in key areas for all employees to see the current status and the progress made.

T$D report is available weekly and is formally used

- T$D is regularly used by the entire management team.

T$D report is fully integrated with the project management execution control

- Project managers accept the mindset that MEETING the customer due date is the MOST important measurement they should work for.
- T$D have become the tool for relationship between Project management, Top management and Sales.

Injection 1
Customers orders are the Drum

Inj

IP
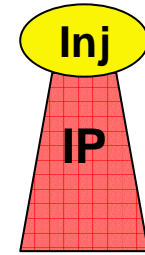
How

T$D report is available weekly

1. Global awareness
- – **Make necessary changes to the project control so that it ensures that the current system (computerized or manual) clearly shows the customer due dates in all internal reports.**

2. Report Structure
- – **Learn the structure of the T$D report**
- – **Develop analysis of the lateness with relevant statistics**
- – **Provide weekly reports**
- – **Provide analysis over time to evaluate the trend** (it is a measurement)
- – **Develop a report with the data on how many projects are open – get the DD, value of the project and any additional data that is relevant for the reports (such as department, resource, supplier etc.)**

3. Data collection – computerized
- – **Develop the procedures to collect the relevant data from the IS (open projects that are late, their value, the promised DD, project type, etc.)**
- – **Record the data on the agreed excel file for T$D**

How

Inj

IP
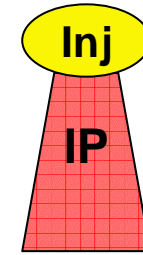
T$D report is available weekly (continued)

4. Investigation

– When a project is late – detect where is the project held and record the location at the moment and the major reason. Produce pie charts

– If more than one resource, department or location is holding the project – when it is significant we may double record for both locations

– Provide the ability to probe into specific projects to ensure that the situation is under control while identifying the person that is in charge of sorting out the issue

T$D report is available weekly and is formally used

5. Management Initiatives

– Develop the mechanism of assigning and passing T$D from one resource to another as per the planned flow

- For Top management and heads of functions (resource managers), 6-8 people, to identify problematic areas
- T$D is used for global management to close the gap with the late open projects

T$D report is fully integrated with the project management execution control

6. Improved investigation (later)

– After Buffer Management injection is in place – provide the ability to probe into the situation through the Link to the Action log

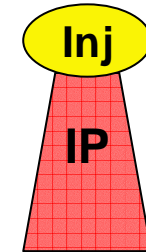# Injection 1
Customers orders are the Drum

Inj

IP
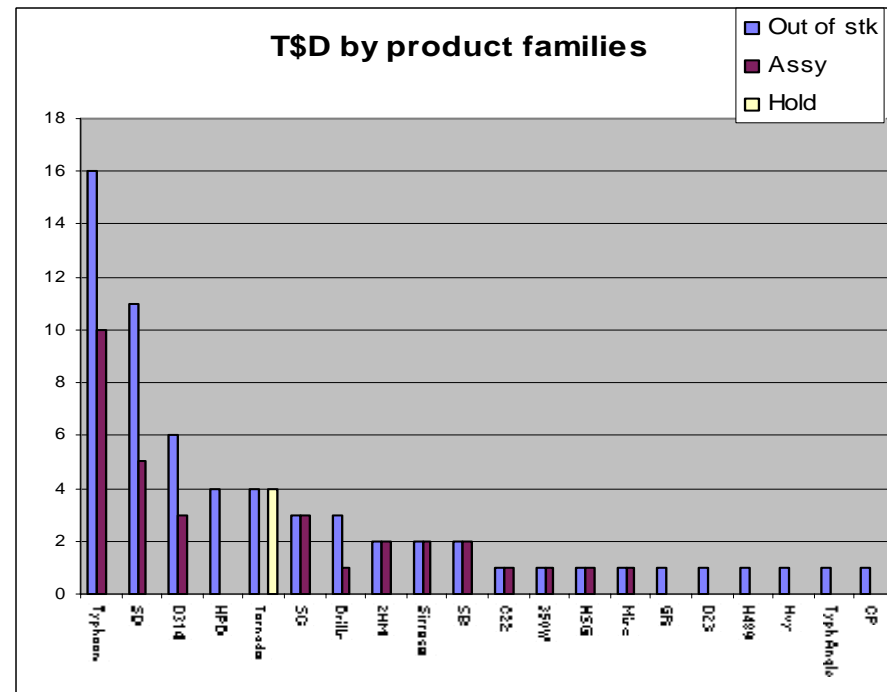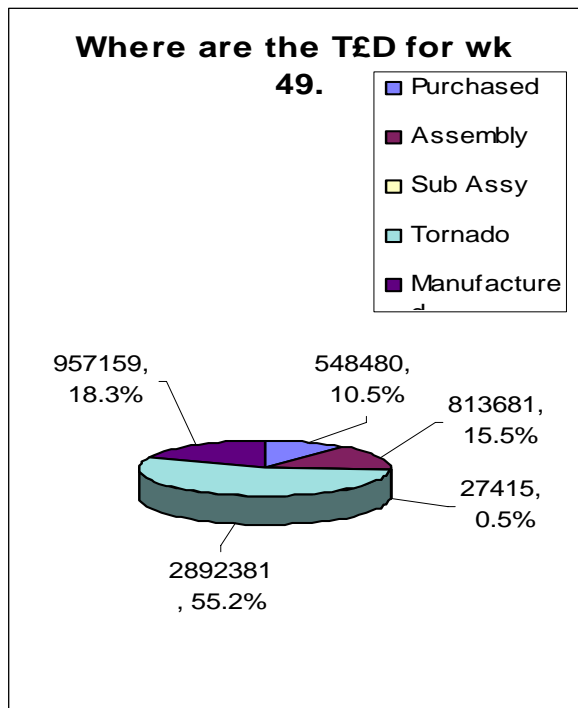
Implementation Plan

```
┌──────────────┐      ┌──────────────┐
│ 1.           │      │ 4.           │
│ Global       │─────▶│ Investigation│─────┐
│ awareness    │      │              │     │
└──────────────┘      └──────────────┘     │
                                           ▼
                                    ┌──────────────┐      ┌──────────────┐      ┌──────────────┐      ┌──────────────┐
                                    │ T$D report   │      │ 5.           │      │ T$D report   │      │ T$D report is│
                                    │ is available │─────▶│ Management   │─────▶│ is available │─────▶│ fully        │
                                    │ weekly       │      │ initiatives  │      │ weekly and   │      │ integrated   │
                                    │              │      │              │      │ is formally  │      │ with the     │
┌──────────────┐      ┌──────────────┐     ▲              └──────────────┘      │ used         │      │ project      │
│ 2.           │      │ 3.           │     │                                    └──────────────┘      │ management   │
│ Report       │─────▶│ Data         │─────┘                                                          │ execution    │
│ structure    │      │ collection   │                                                                │ control      │
│              │      │ from IS      │                                                                └──────────────┘
└──────────────┘      └──────────────┘                                                                       ▲
                                                                           ┌──────────────┐                  │
                                                                           │ 6.           │                  │
                                                                           │ Improved     │──────────────────┘
                                                                           │ investigation│
                                                                           └──────────────┘
```

┌──────────────┐
│   task   │
└──────────────┘

┌──────────────┐
│ Deliverable │
└──────────────┘

Examples – Department Pie Chart and by project type (family)

Where are the T£D for wk 49.

- Purchased
- Assembly
- Sub Assy
- Tornado
- Manufactured

957159, 18.3%

548480, 10.5%

813681, 15.5%

27415, 0.5%

2892381, 55.2%

T$D by product families

- Out of stk
- Assy
- Hold

Families (x-axis): Typhoon, SP, D314, HPD, Tornado, SG, Drill, 2HM, Sirroco, SB, C22, 350W, HSG, Hire, GR, D23, H499, Hvy, Typh Anglo, CP
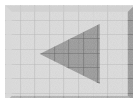
Back

Injection 1
Customers orders are the Drum
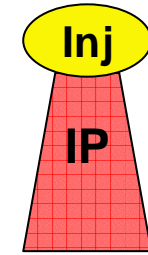
Examples –T$D Analysis per department/resource
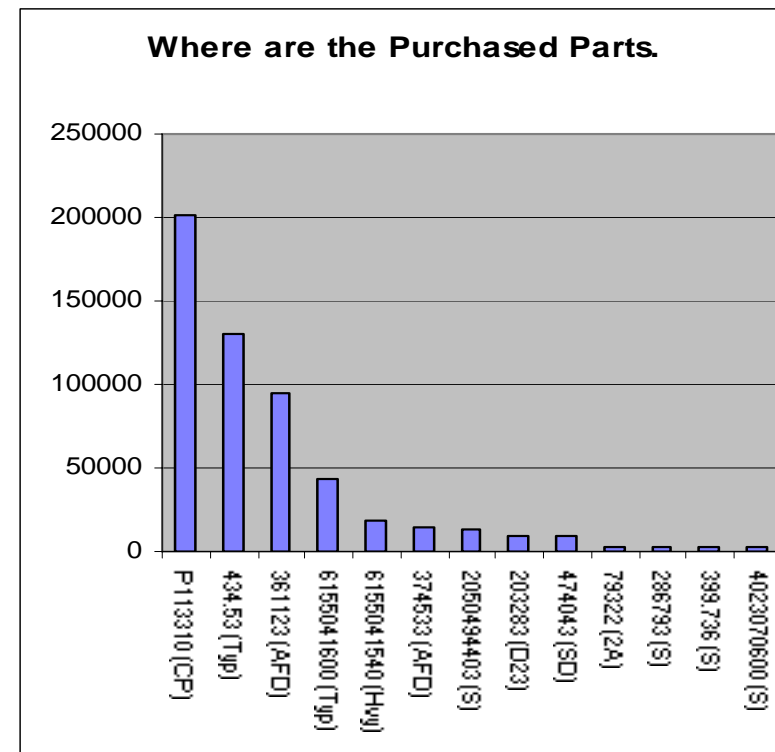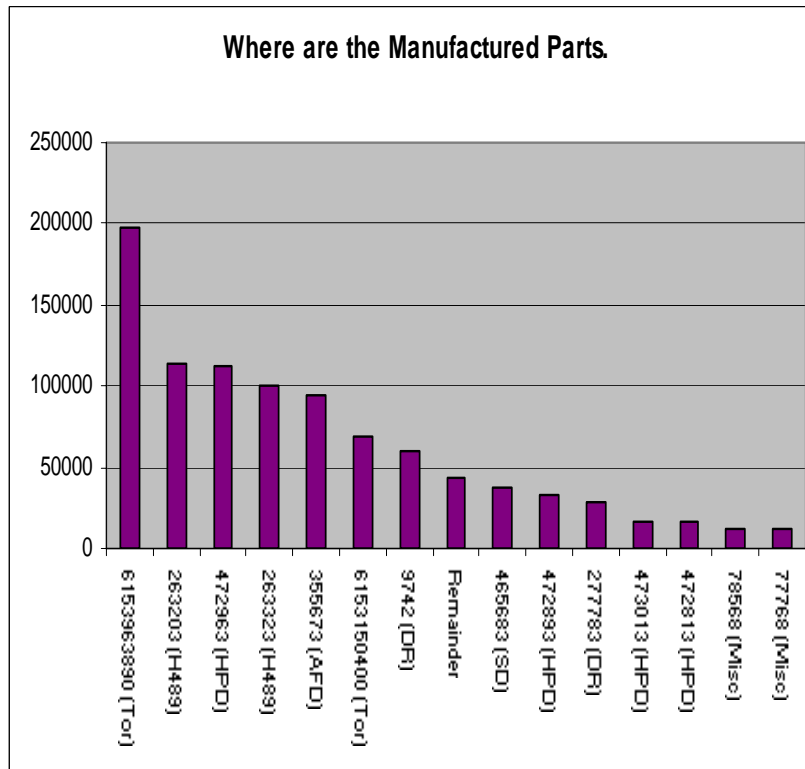
Where are the Manufactured Parts.

Where are the Purchased Parts.

Back

A1 ▾ ƒx Action Log

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
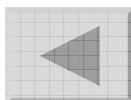
Action Log

Title of Meeting:	Throughput £ Days wk 49		Chair:	SB	Attendees:	SB, BB, TE, AN, JB , DS , TD			Time:	2.30
			Scribe:	SB	CC:	ML, BA,			Date:	07-Dec

Item	Description	Owner	Action	Who	When
1	77333 - Angle Body - Material changed which caused heat treatment problems extending the lead time.	SM	New material to be specified, samples required for cutting trials. New material with added Silicon due Monday 26th Sept.	SM	01-Oct
2	2050479163 - 30 components in every batch scrapped at the IT & Matsuura operations.	SM	Design have been tasked to improve the scrap.	SM	Dec-05
3	Parts that are subcontracted but progressed by Manufacturing / machine shop that have free issue parts	BA	Supply of free issue parts that are then given to a sucontractor must stop, the supplier must be responsible. Purchase will move this problem bit by bit. Spid 53 & Trig to be actioned first	AN	
4	Change the system so that a certain percentage of collets and adaptors are kept in Desoutter rather than PTD.	JB	Dual location required. Albert will move the items as required. This system is on going the following parts have been moved - 2552, 392693 remove from minutes next mtg	JB	
5	Consignment stocking of high volume / low cost parts.	TD	Understand the implication of using VMI on low cost / high volume parts. Move this to the management meeting.	BA	Feb-06
6	Heat treatment queues	ML	Labour Issue - new operator starts on Monday and 2nd operator offered a position. Meeting to be planned next week to understand the reason for the delays.	AN	Dec-05
7	566.430 Housing Poor supply.	MM	Mike McKenna will change the lead time. **Lead times changed on Walor, Siobra & Spid 53.**	AN	Dec-05
8	466013 - SD Gear case affecting 14 HD1 models.	SB	Change the safety stock to allow more time.	BA	Dec-05

▸ ▸ ▸ \ **wk 49** / wk 48 / wk 40 / Wk 36 / wk 34 / WK 32 /

AutoShapes ▾

Back

Injection 1
Customers orders are the Drum

Inj

IP

Manufactured Parts over 36 wks
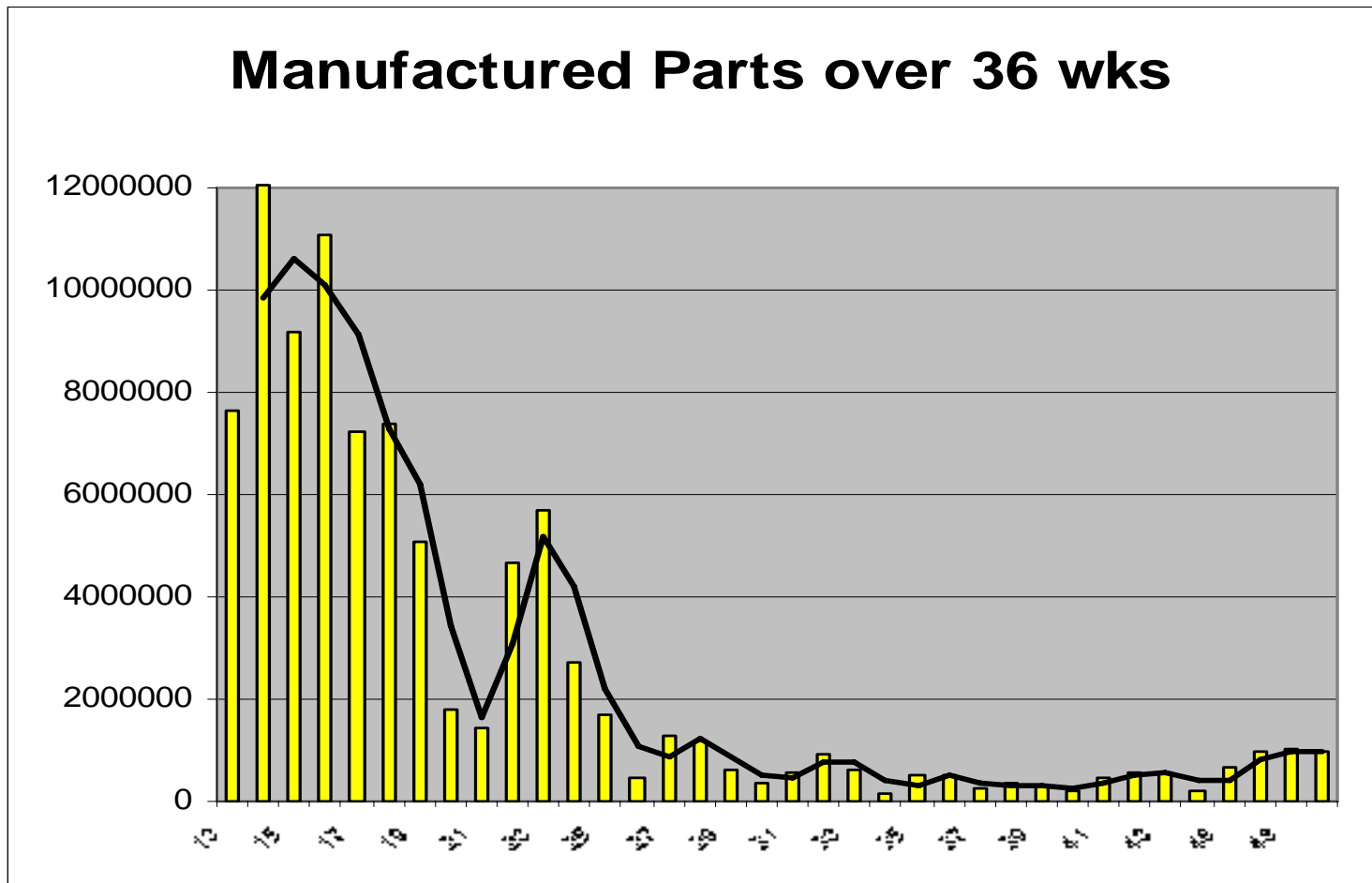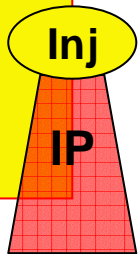
Back
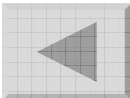
Project Management Injections Summary

Planning Injections

2. Project Planning Diagrams are in place

3. Tasks are resourced and estimated for duration

4. Resource Conflicts are removed from the plans

5. Critical Chain is determined

6. Buffers are inserted in strategic points
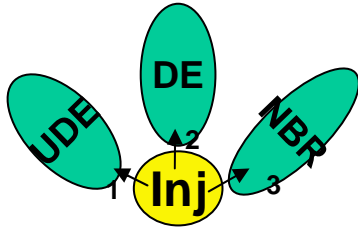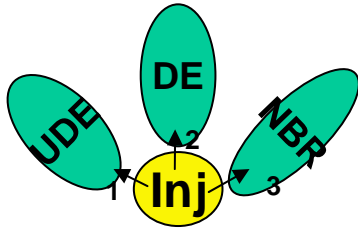
7. Estimates of durations are "challenging but achievable"

What

Project plans are being created in a diagrammatic
   format that shows clearly the task
   dependencies that are necessary and sufficient
   in order to achieve the successful final
   deliverable of each project
                [Dependency diagrams]

What

All tasks shown within project planning dependency diagrams have resources and estimated durations allocated to them

**Injection 4
Resource Conflicts are removed
from the plans**

What

Resource conflicts WITHIN each project are being resolved or "levelled" in the planning of projects before execution

What

The Critical Chain is the chain of task and resource dependencies that prevents the project from being planned in a shorter interval, given finite resources.

- If the goal of a project team is to finish a single project with the shortest project duration possible (consistent with scope, quality and budget),
- and if the CRITICAL CHAIN is what prevents the project team from planning a shorter project duration
- then the CRITICAL CHAIN is the Secondary Constraint of that project.

Injection 5
Critical Chain is determined

What

The Critical Chain is the chain of dependent events - one that takes into consideration all dependencies (including resource dependency).

Critical Path Promise = 56 days

Letter and
Colour = Resource

| G10 | B10 | M16 |
| W16 | M16 |
| C20 |
| Finish |

Critical Chain

| G10 | B10 | M16 |
| W16 | M16 |
| C20 |
| Finish |
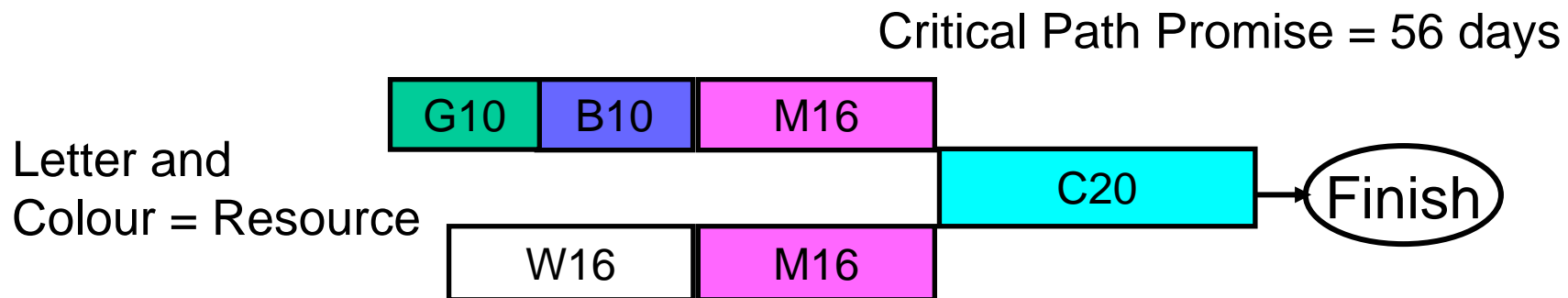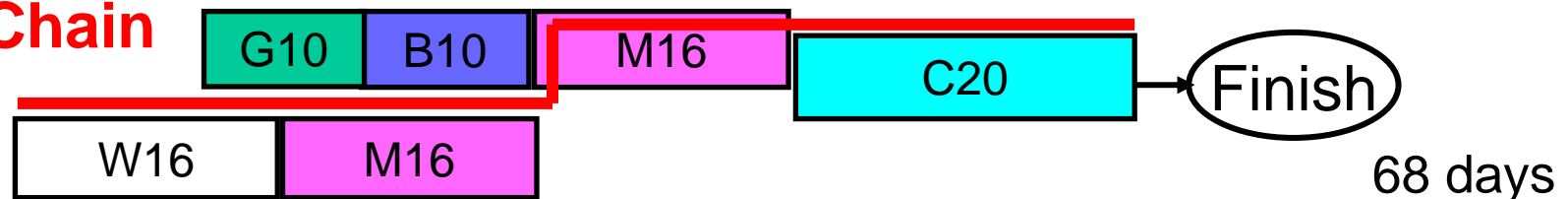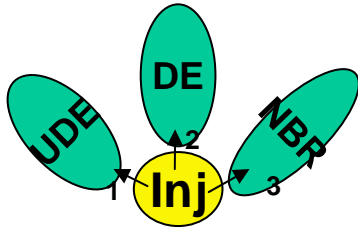
68 days

What

The Critical Chain of each project is being protected by the placing of sufficient time buffers at strategic points within the flow of tasks:

Project Buffer (PB)
Feeding Buffers (FB)

FEEDING BUFFER

PROJECT BUFFER

| G10 | B10 | FB | M16 | | C20 | PB |

| W16 | M16 |
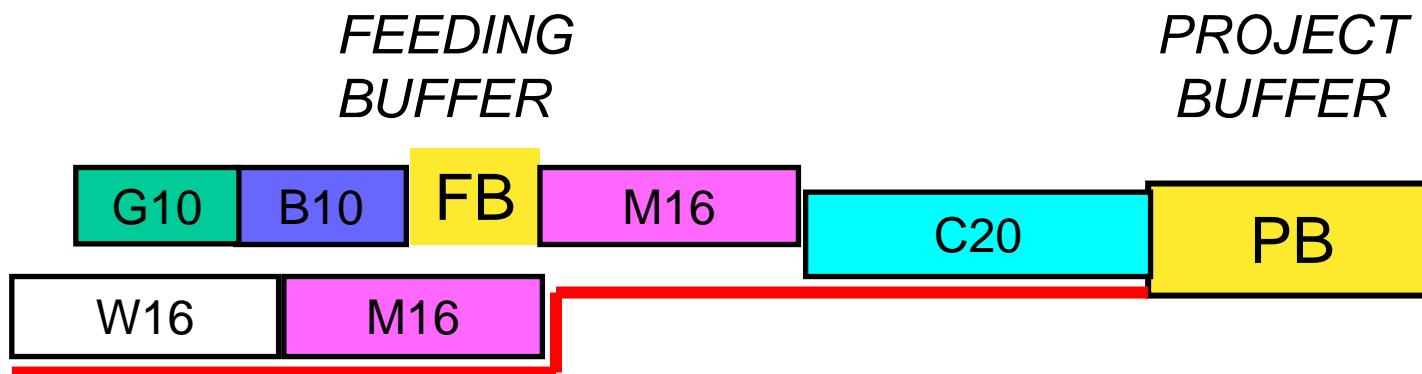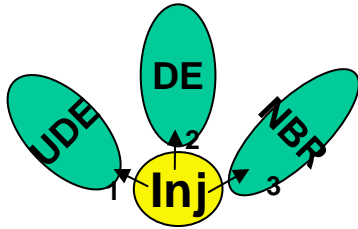
Injection 7
Estimates of durations are "challenging but achievable"

What

Estimates of duration are being used in project planning based on "challenging but achievable" times, which are based on 50% probability of completion within the estimated time which means roughly ½ of the current estimation of completion time at 90% probability.

The safety time will be aggregated in Buffers, available for the uncertainty - wherever it strikes.

FEEDING BUFFER

PROJECT BUFFER

| G5 | B5 | FB5 | M8 | C10 | PB 17 |

| W8 | M8 |

Promise 51 days
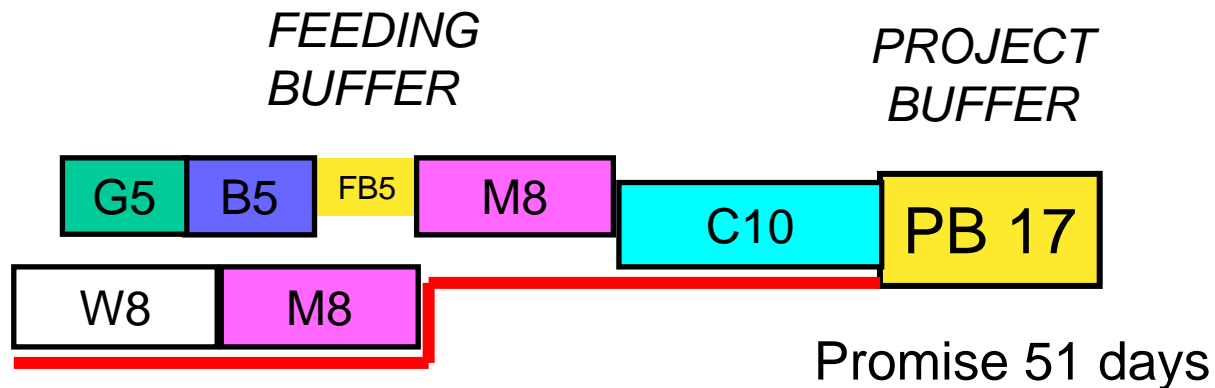
Project Management Injections Summary

Execution Control Injections

8. Tasks are performed according to the status of their corresponding buffers

9. Resource Availability is monitored in anticipation of a new planned task

10. BM for corrective actions (expediting) is in place

11. Buffer penetration reasons are reviewed weekly for POOGI

12. Resources are monitored as potential CR – Critical Resources

What

- The Project Management buffer status indicates how much safety time has been consumed while the order, as a project, moves into the process flow until it completed and ready to be delivered.

- The relationship between the consumption of the buffer time and the consumption of the Critical Chain allows the management to define which project needs to be prioritized, and generates a solution to solve the assignment of resources.

- The color system gives the global priority for the flow of tasks from one resource to another. Each project task is colored according to its penetration to the project buffer.

What (continued)

- The PM buffer is presented as a 3 color time scale; a buffer in green indicates that the project execution is quite similar to the scheduling, the buffer in yellow indicates we need to check as it looks there is significant gap between the schedule and the execution, and the buffer in red indicates that there is a need to expedite that project, as it is in real danger to be late.

- Black (past due date) is higher in priority than red, red than yellow, yellow than green. There are also clear guidelines of internal priority within the same color according to the percentage of penetration into the Project Buffers.

- Team leaders may find that the sequence suggested by the color system is unrealistic and ineffective. When this is happening, a flag must be raised. Clear guidelines are agreed for handling situations when answers cannot be given in the time needed.
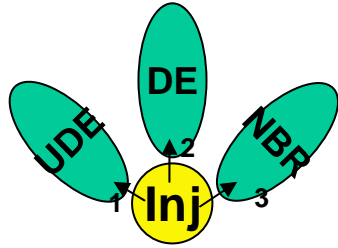
Typical Relevant UDEs

1. We have too many cost overruns against budget

2. Many projects take longer than expected

3. We often struggle to hit intermediate deadlines

4. Resources are not available when needed by the project

5. There are many fights and disagreements among project managers trying to secure resources for their own projects
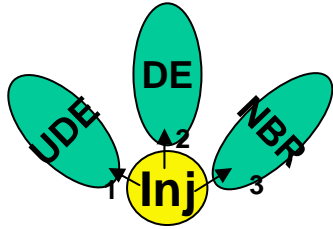
6. Top management is under pressure to add more resources

Current Reality

Usually the project manager does not have all the resources needed for the project dedicated solemnly to their project. The resources come from shared pools or from regular (day-to-day) jobs. Project managers have all the responsibility and very little authority over the resources. Therefore, in order to guarantee the resources – they have to "fight" for them. When they need the resource and the resource is occupied by another project – the project managers need to put some influence to reallocate the resource to their project.
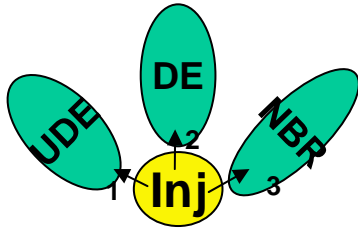
Questions to be asked to validate the UDEs

Resource allocation – What is the mechanism for resource allocation? Who has the final decision? What happens when your request is accepted? Or when it is turned down?

Meeting Mile Stones – What happens when a contractual milestones is approaching? Describe some typical actions and their cost?

Project review meetings – Describe what is happening in preparation for top management review of the projects? What actions are taken? At what cost?

Pressure to add resources – What is the mechanism to demand more resources to the project? Who is authorizing the addition of the resources? When this is likely to happen?

## The Desired Effects of implementing Injection 8

- For all the local team leaders there is a clear mechanism to agree in the allocation of resources to the different project.

- Each of the resources can easily relate their priorities to the global system need to deliver on time.

- The alignment between technical & commercial requirements for resource allocation is easier to understand.

- All the areas understand the relevance of preserving the good enough resource allocation, to protect the DDP.

Injection 8
Tasks are performed according to the status of their corresponding buffers

Inj

IP
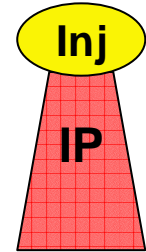
How - DELIVERABLES:

There is a physical indication of the project buffer status

- Agree on the mechanism to capture the estimated time of completion for the task and the way to assess the impact on the project buffers (this is a standard feature with all CC software)
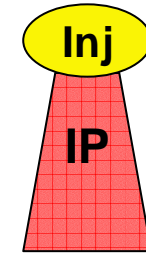
Process is in place for assigning priorities for tasks

- Determine procedure for the project manager to assign priority to the different tasks according to the depth of penetration to the project buffers.

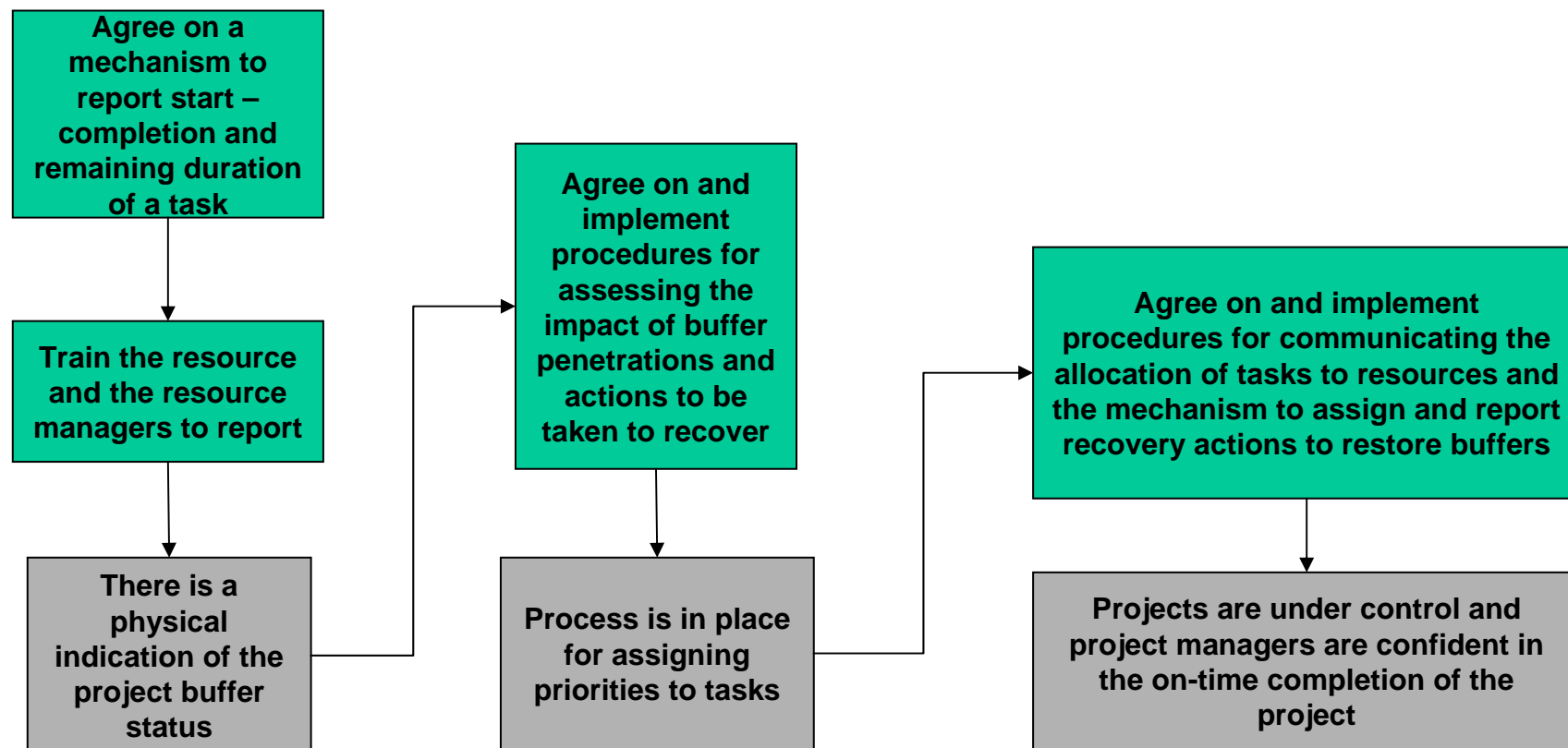**Projects are under control and project managers are confident in the on-time completion of the project**

- Agree on the mechanism to communicate the new priority to the task manager and the resource performing the task so that the new priority is clear to all involved.

Injection 8
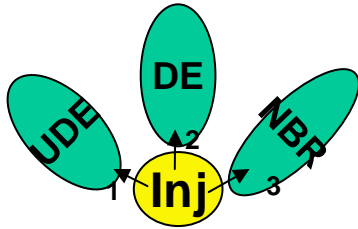# Tasks are performed according to the status of their corresponding buffers
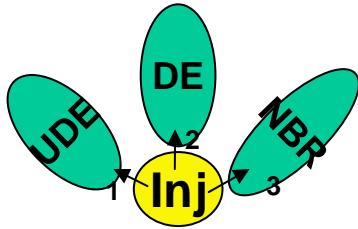
Inj

IP

Implementation Plan

Agree on a mechanism to report start – completion and remaining duration of a task

Train the resource and the resource managers to report

There is a physical indication of the project buffer status

Agree on and implement procedures for assessing the impact of buffer penetrations and actions to be taken to recover

Process is in place for assigning priorities to tasks

Agree on and implement procedures for communicating the allocation of tasks to resources and the mechanism to assign and report recovery actions to restore buffers

Projects are under control and project managers are confident in the on-time completion of the project

Deliverable

task

What

The project manager keeps track of the progress of the project. A special attention is paid to the critical chain. When a task on the critical chain is about to be completed – the project manager is prompted to take actions to ensure that the resource needed for the next task is ready and will be available when needed. This process is called "Resource Buffer" and can we perceived as "Wake-up call".
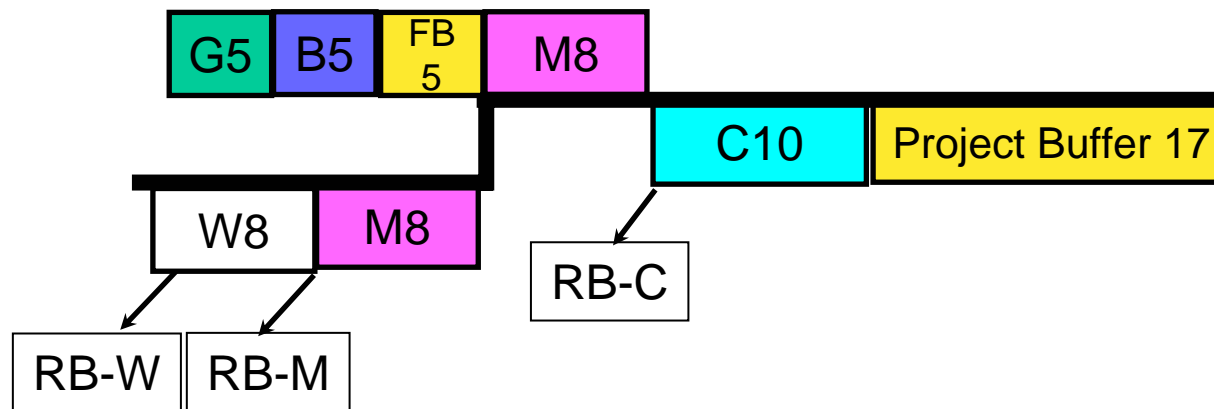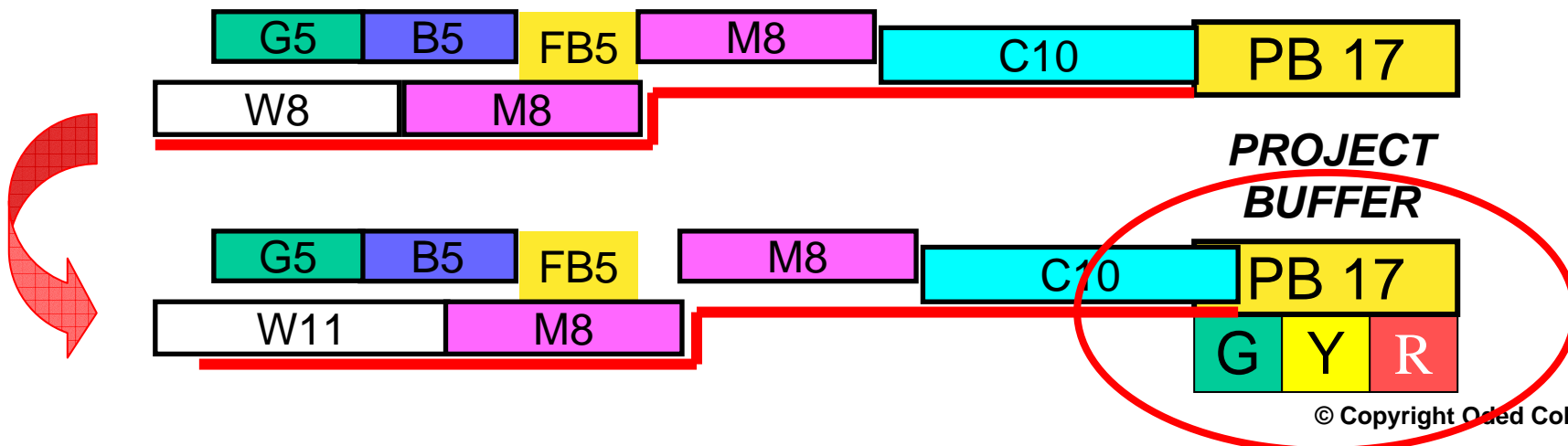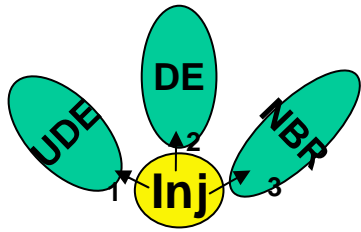
Injection 10
BM for corrective actions
expediting) is in place

What

Based on the frequent reporting of the task managers (or the task performers) the project manager knows the status of the task completion with the most updated estimation of the remaining time for the completion. By updating the project plan – the project manager can assess the impact of the new completion time on the project completion date. Any negative deviation from the planned time (longer than planed) causes **"penetration"** into the Project Buffer. The degree of the penetration determines the color (status) of the Project Buffer which is used for managerial decisions for taking corrective actions.
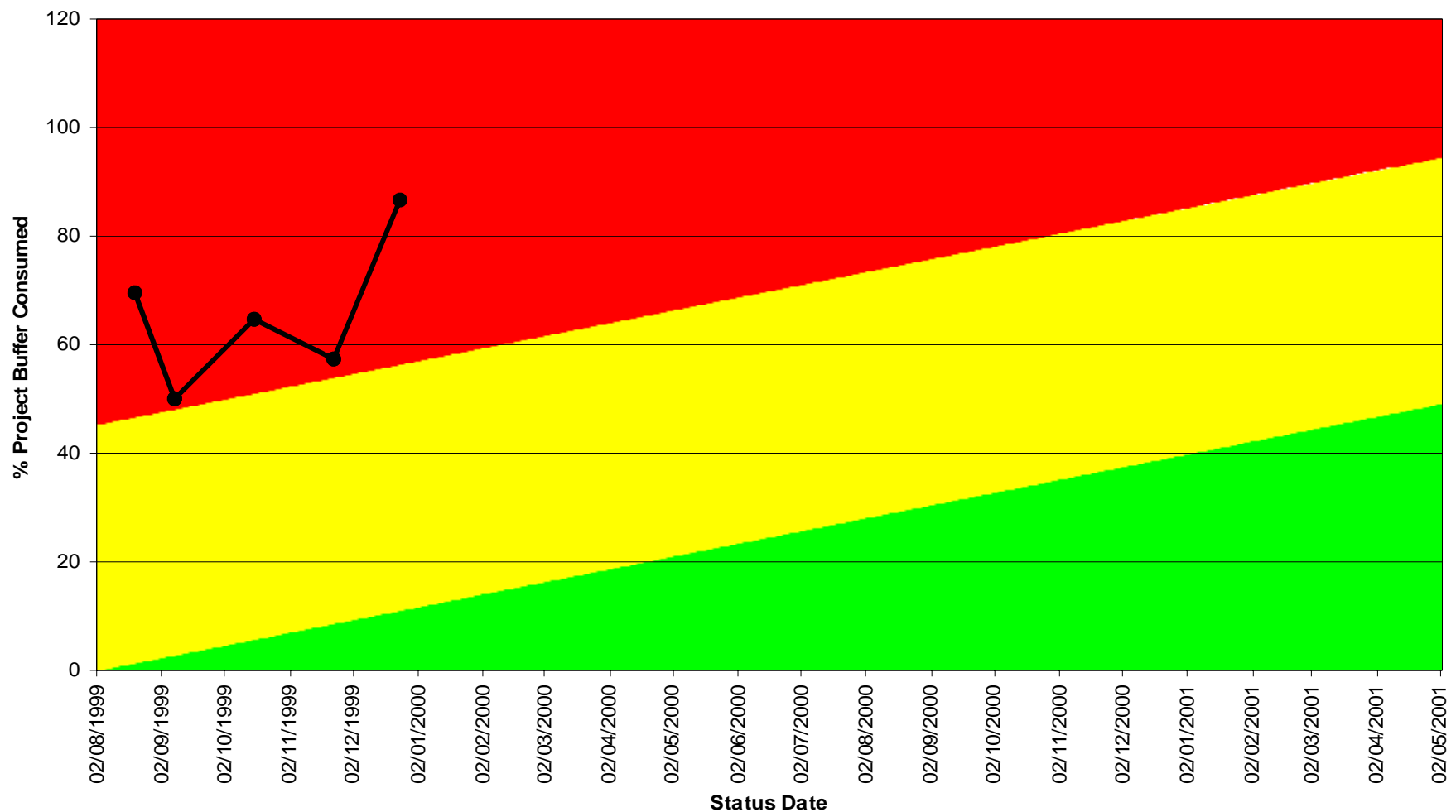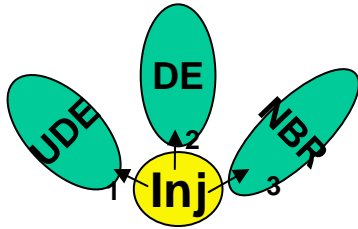

PROJECT BUFFER

Injection 10
BM for corrective actions
(expediting) is in place
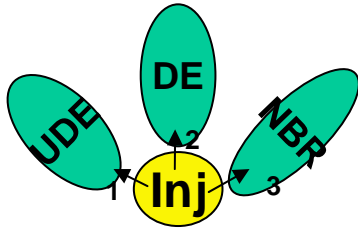
What

Project 1 Buffer Status

**Injection 11
Buffer penetration reasons are
reviewed weekly for POOGI**

What

There is a value in analysing the reasons for buffer
penetrations on an on-going base. Some of the delays
and deviations are specific to the project, but some are
more permanent and through the use of buffer
management statistics the management can find areas
that need an improvement initiative under the heading of
continuous improvement (POOGI)

What

Through the buffer management statistic it may be revealed that some (few) resources tend to lack capacity and cannot satisfy the work content required within the planned time.

Many times the critical resource is needed in several tasks within the project and across several projects – causing project managers to fight for securing the resource for their project.

Injection Flower