

# DOTS™

## Drilling Operations Tracking System



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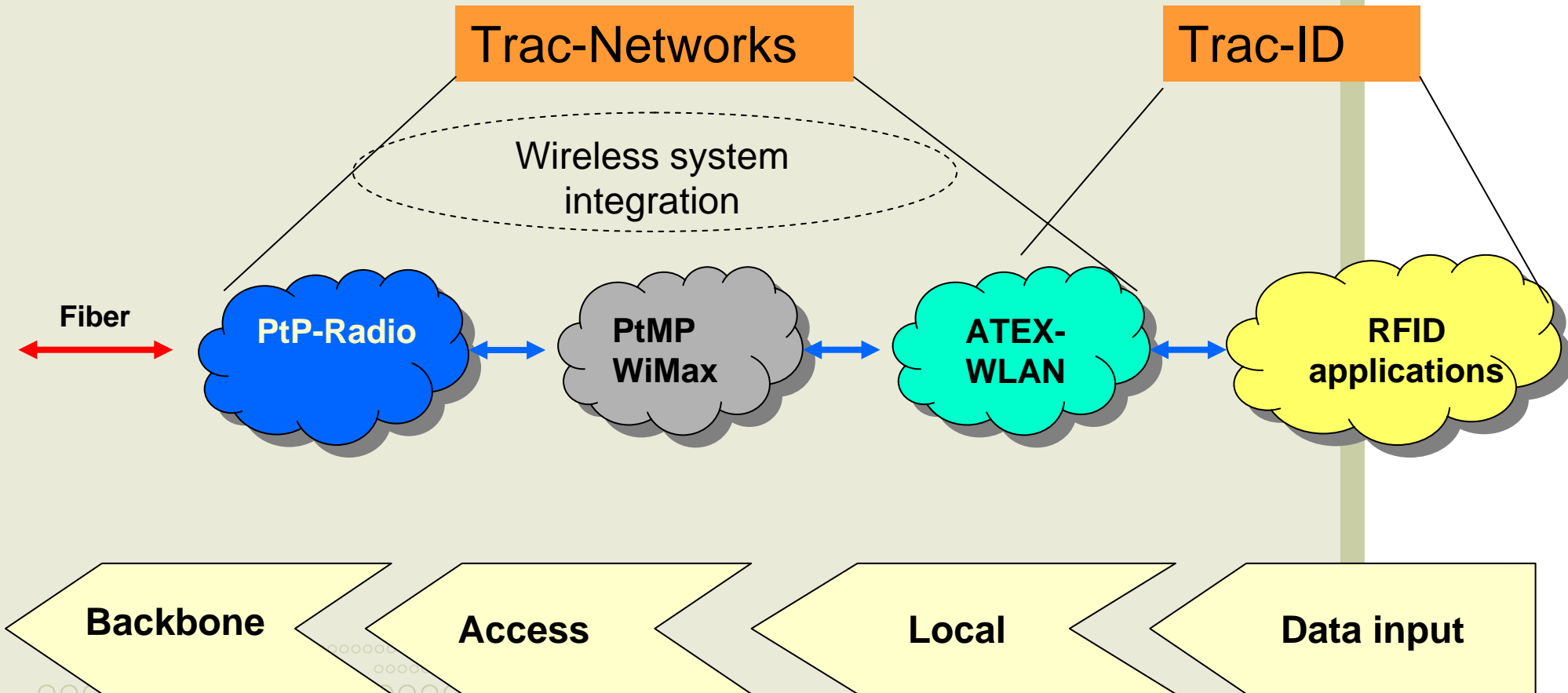
# Trac ID's Business Idea, Vision & Owners

Develop and market systems solutions for wireless tracking, monitoring and communication related to equipment, processes and personnel for high value applications, with focus on the Oil and Gas Sector.

Contribute to increased safety and increased profits in oil and gas field operations and other harsh environment operations

Statoil Innovation (largest shareholder), smaller technology companies & individuals.

# Two business units – enabling Integrated Operations



# Drilling Operations Tracking System

The project was tendered by Statoil in 2006

Project objectives:

- Improved life cycle management of drill pipes
- Better supply chain management of drill pipes

Project parts:

- Develop and test reliable tracking technology
- Develop drill pipe database for both objectives
- Develop statistical SW for life cycle management



# DOTS objectives

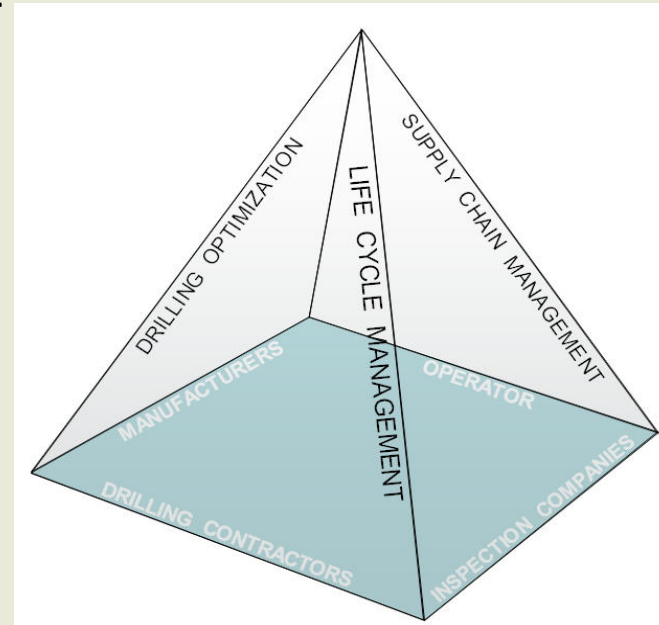
To **reduce cost** and **improve quality** for:

Life Cycle Management

Supply Chain Management

Drilling Operations

Integrated operations



## Achieved through:

Cradle-to-grave drill pipe tracking

Secure data management and easy information access.

Advanced algorithms for drill pipe lifetime estimates.

# Improved life cycle management

Increasingly longer wells

Result: Higher costs due to string breakage

String breakage mainly caused by faulty DPs

Must know for every DP:

- Manufacturing data
- Usage during drilling operations
- Data from inspections and maintenance

Data to be collected, stored & to be accessible in a database

Statistical software to assess the quality of every DP, in relation to its planned use.



# Drill pipe database

## Hardware

- Real time data interface (OPC)
- RFID protocol

## Data Storage

- Drill pipe database
- Historical database

## Analysis

## Users

- Graphical user interface per user group (Web portal)
- Data interface (XML web service)



# Statistical Software

Calculation of the impact on the drill pipe:

- Torque
- Axial stress
- Bending stress
- Pressure
- Temperature



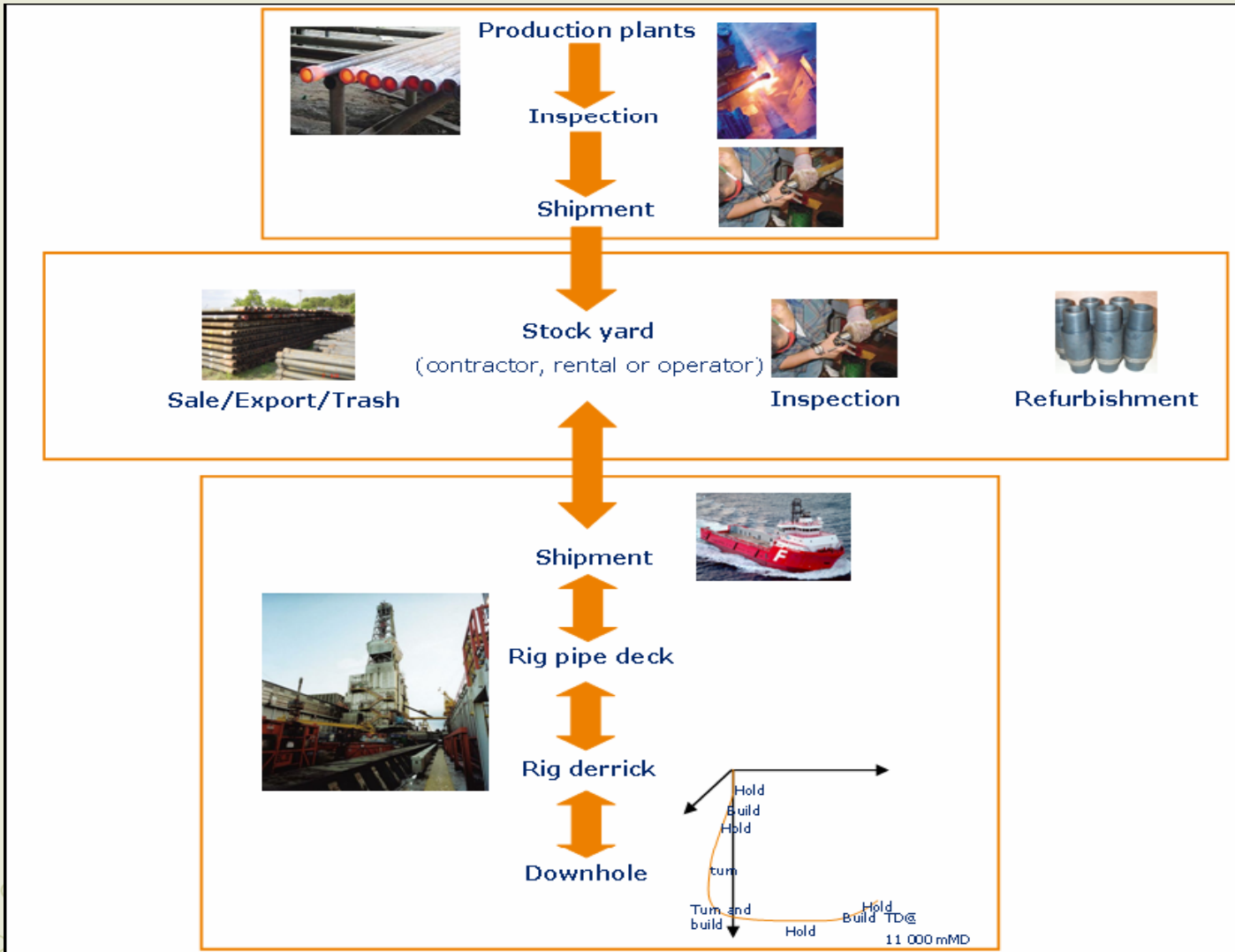
Computation of the effects of the stresses:

- Reduced steel quality corrosion/wear
- Generation of fractures/cracks.

Drill pipe lifetime calculation

Data Quality assurance

# DOTS will be a total system involving the whole drill pipe supply chain



# DOTS during drilling

Need to know in real time exact string length & DP geometry:

Automatic DP ID registration during drilling is required.

Challenges to read automatically ID on RFID tags during drilling

- Where to read
- Required read distance
- Tag design considerations
- RFID solutions to fit into total supply chain requirements

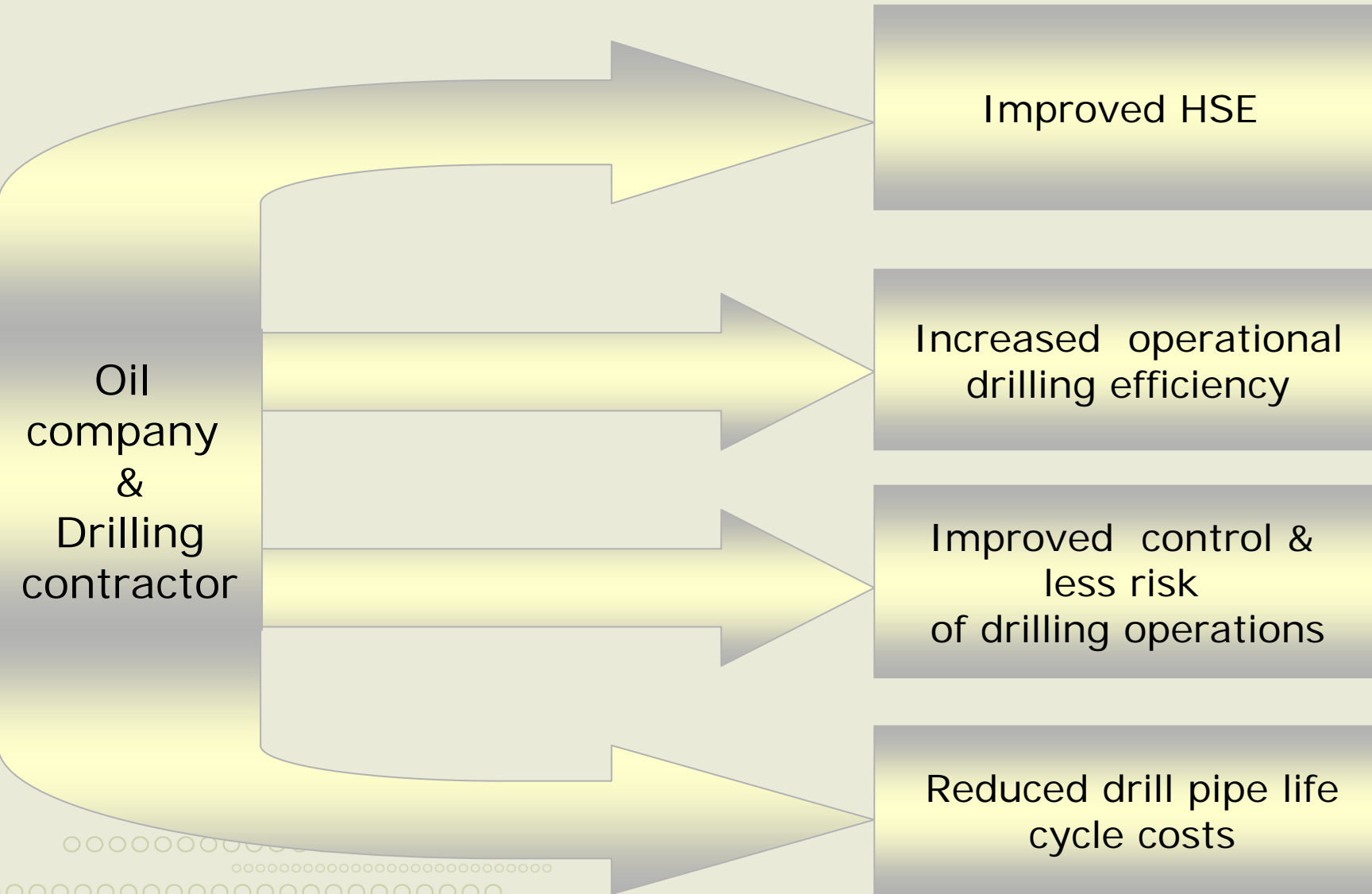
Other System requirements (than automatic DP ID registration):

- Interface to drilling system
- Redundancies in system design

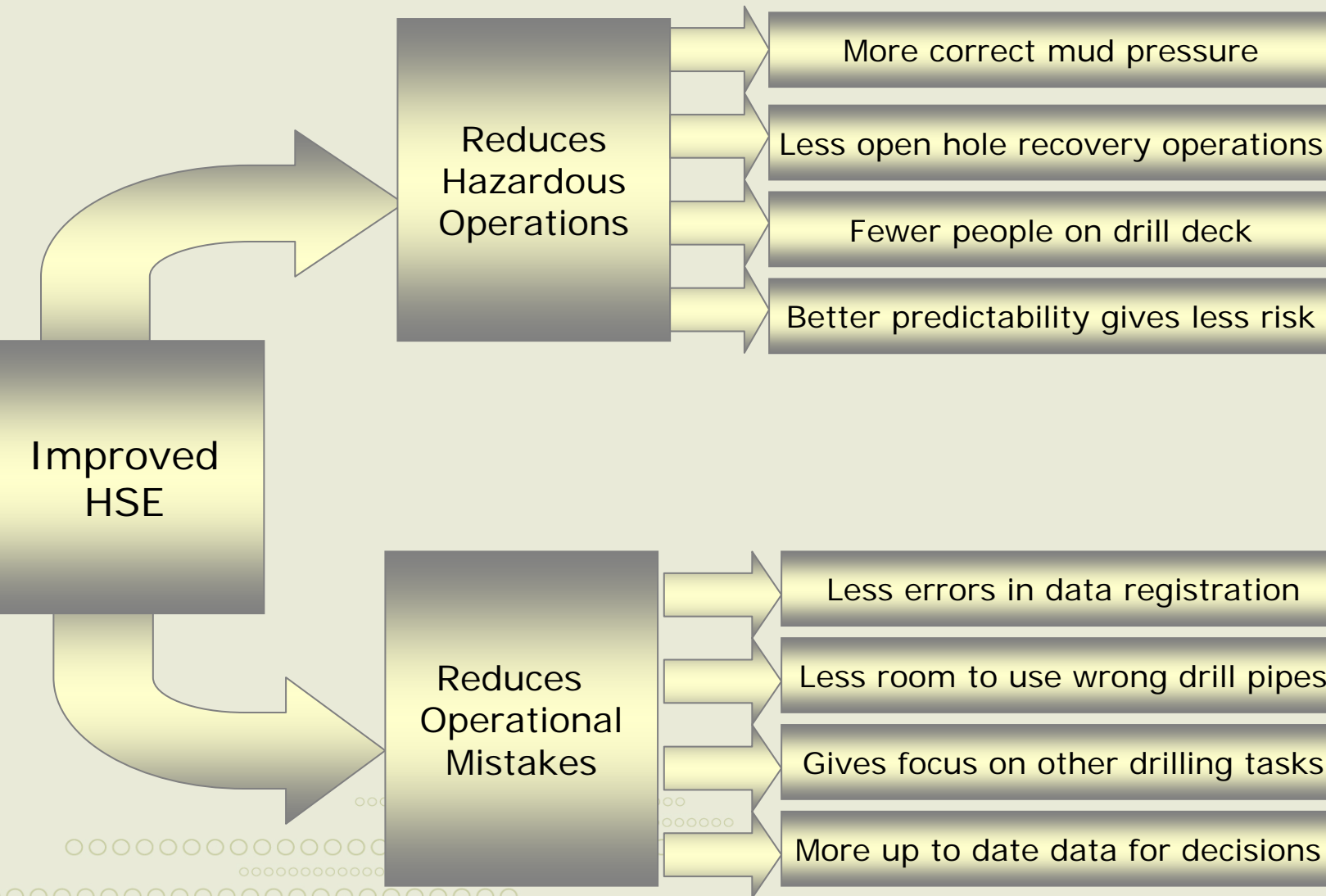
System benefits

- During drilling operations & handling of DPs
- Improved DP utilization & fewer DP inspections

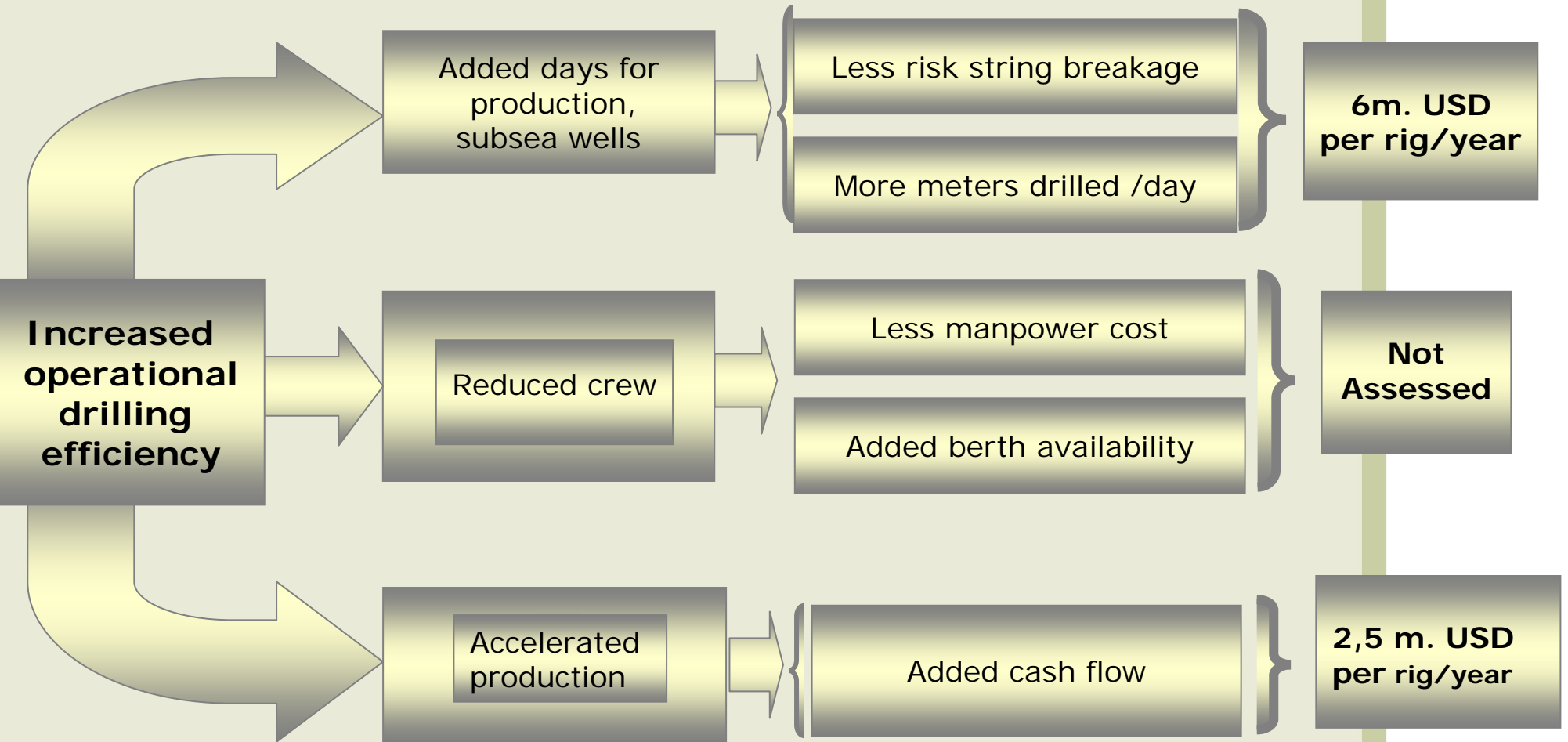
# Benefits, oil company & drilling contractors



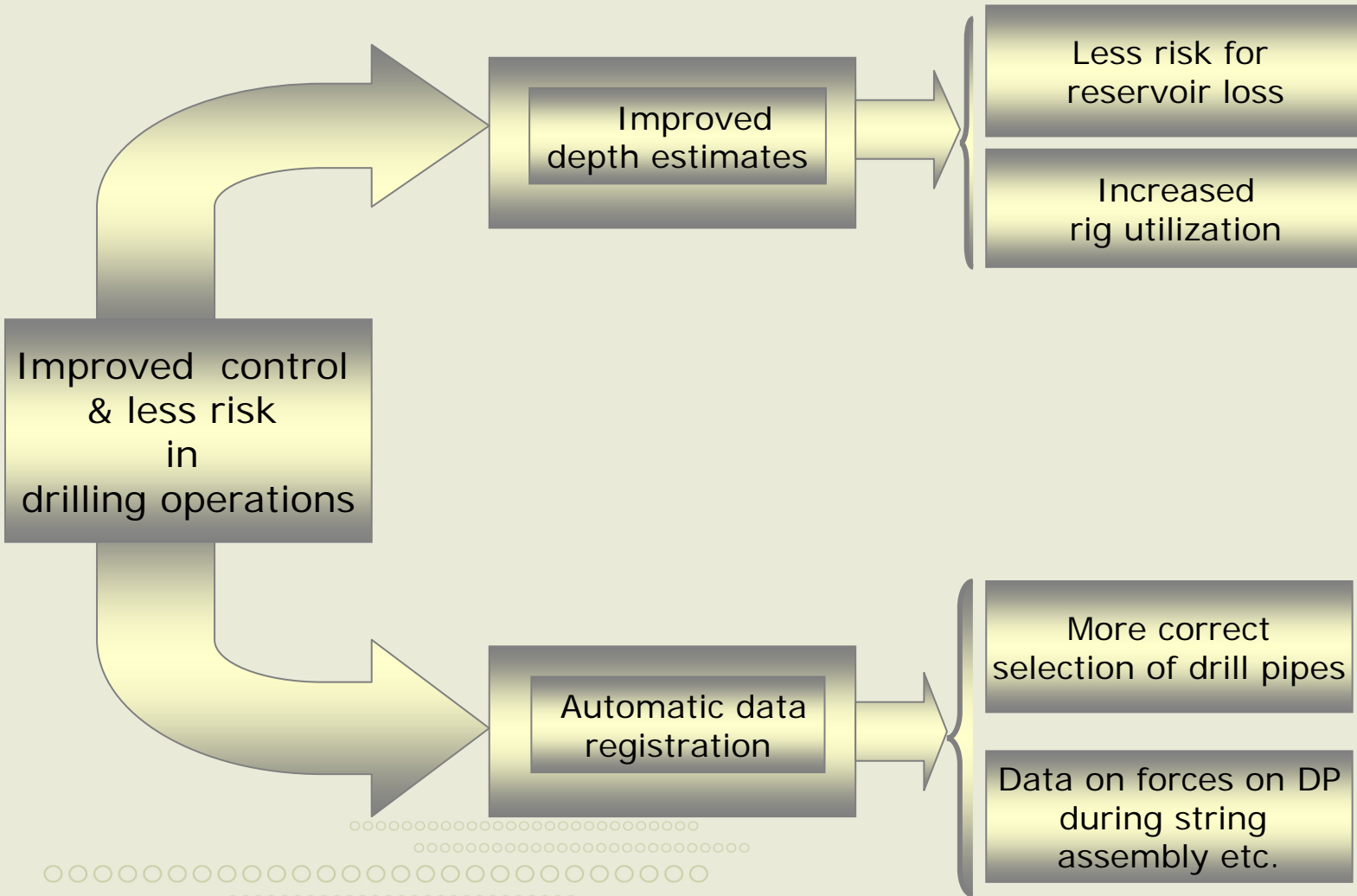
# DOTS benefits - HSE



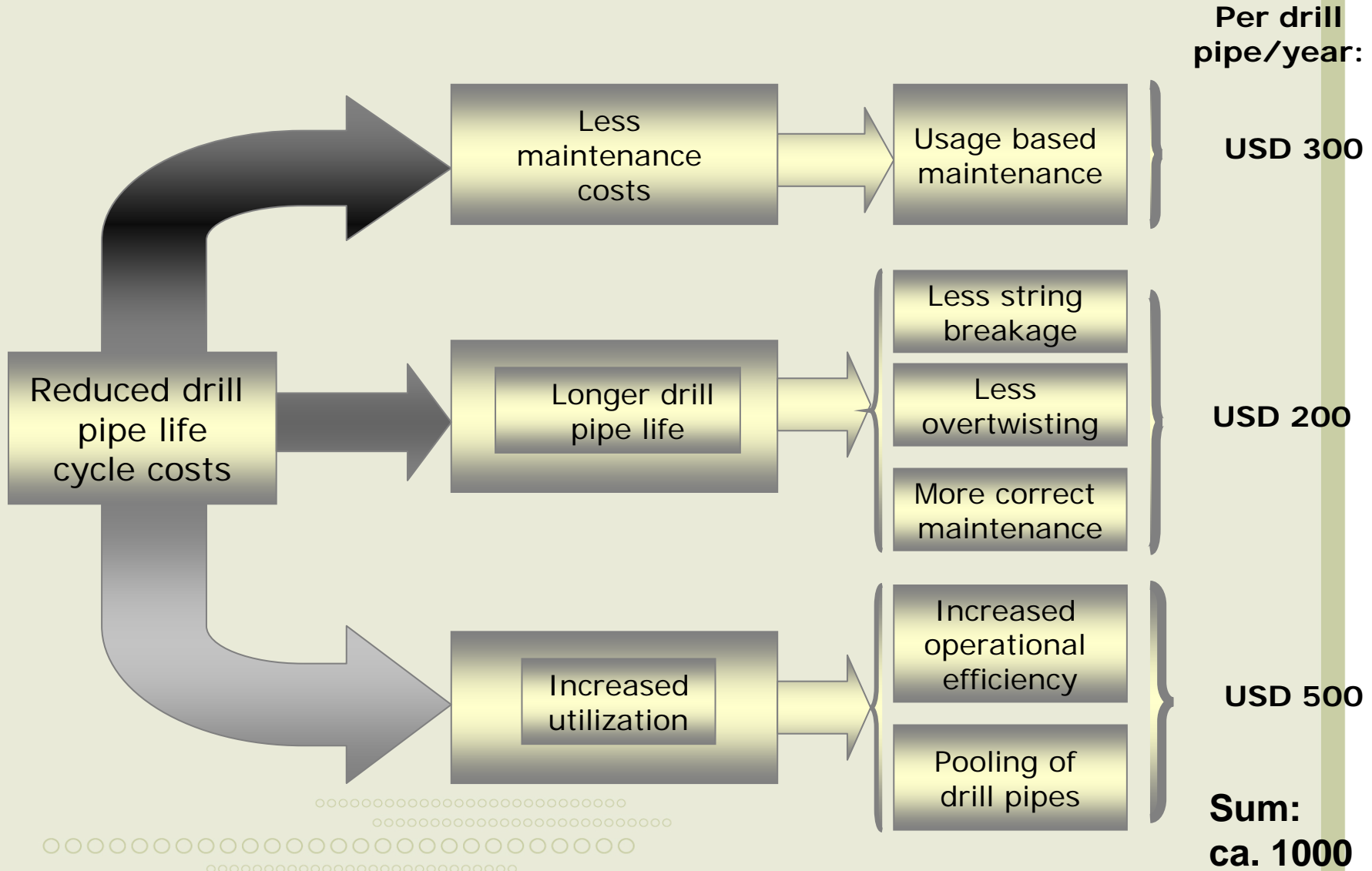
# Increased drilling efficiency



# Less risk in drilling



# Reduced drill pipe costs



Sum = 0,9 m **TRAC-ID**  
USD/rig/year TRAC-ID SYSTEMS AS

# Summary - DOTS estimated benefits

Sum some benefits, floater rigs , MUSD per rig per year		Floater rigs	%
1	Benefit/year/rig due to less lost rig time due to string breakage	0,4	5 %
2	Benefit/year due to 5 % improved drilling rate, rigs	5,6	60 %
3	NPV 12 % of added cash flow per rig per year due to accelerated production	2,5	25 %
4	Reduced Drill Pipe cost due to better maintenance program and asset management	0,9	10 %
5	<b>Sum benefits 1-4, ca: (Other benefits to add: Less risk in drilling and improved HMS)</b>	<b>9,4</b>	<b>100 %</b>