



**ROSEN GROUP**  
**EMPOWERED BY TECHNOLOGY**

ROSEN Group, 2016

**CONFIDENTIAL**

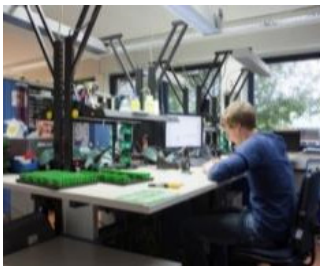
**ROSEN**  
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# ROSEN GROUP

## A SOLUTION PROVIDER AND INNOVATOR



- ROSEN group is a solution provider and innovator. Our product and service portfolio is diverse and based on technology and industrial challenges.



### WHO WE ARE WE INNOVATE

- An extended team of people with a passion for technology and innovation.
- Highly skilled and experienced, we are motivated by the challenges posted by customers working in demanding operating and business environment.
- We are constantly moving ahead , looking for the next serious challenge, striving to raise standard.

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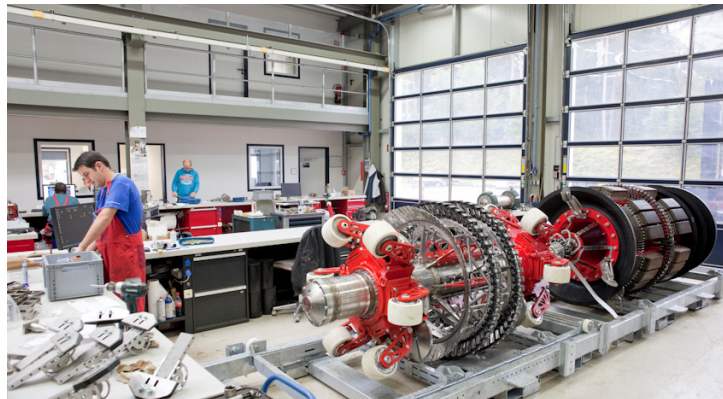


### WHO WE ARE

### WE MANUFACTURE

- Factory provides for the ROSEN Group a service with regards to

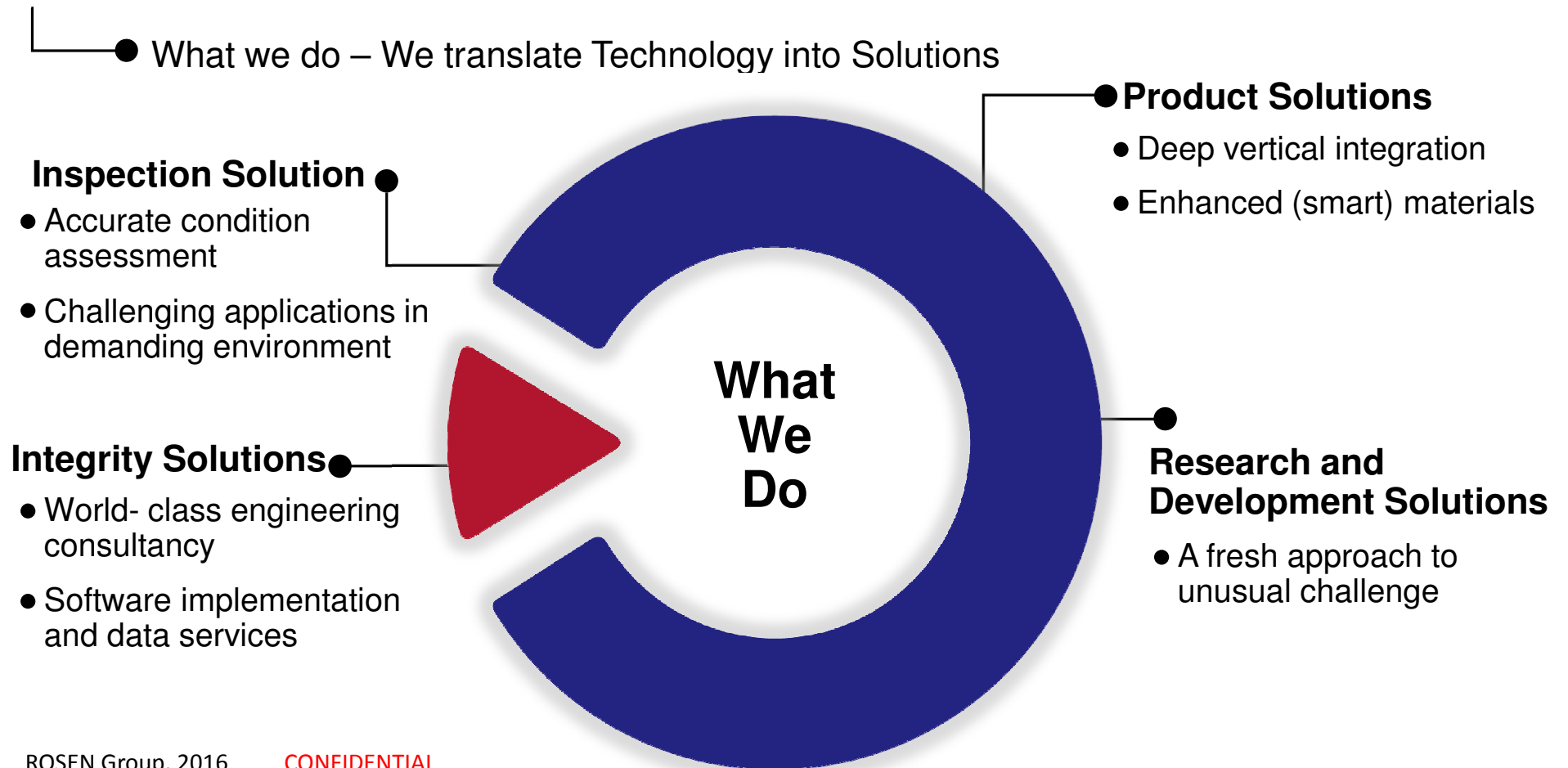
- High precision mechanical parts
- Embedded electronics
- In house plastics products
- 3D printing capabilities
- Technical Testing
- Maintenance for products and material



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# ROSEN GROUP A SOLUTION PROVIDER AND INNOVATOR



● We balance operational excellence and technical innovation



**Operational excellence**



**Technical innovation**

## ROSEN GROUP

### Our vision



- With our motivated staff we want to create ultimate value for our customers by advanced products and integrity service solutions as the world's undisputed leading supplier

**– most reliable, competitive and flexible.**



## WHAT IS PIGGING AND WHAT IS ITS PURPOSE?

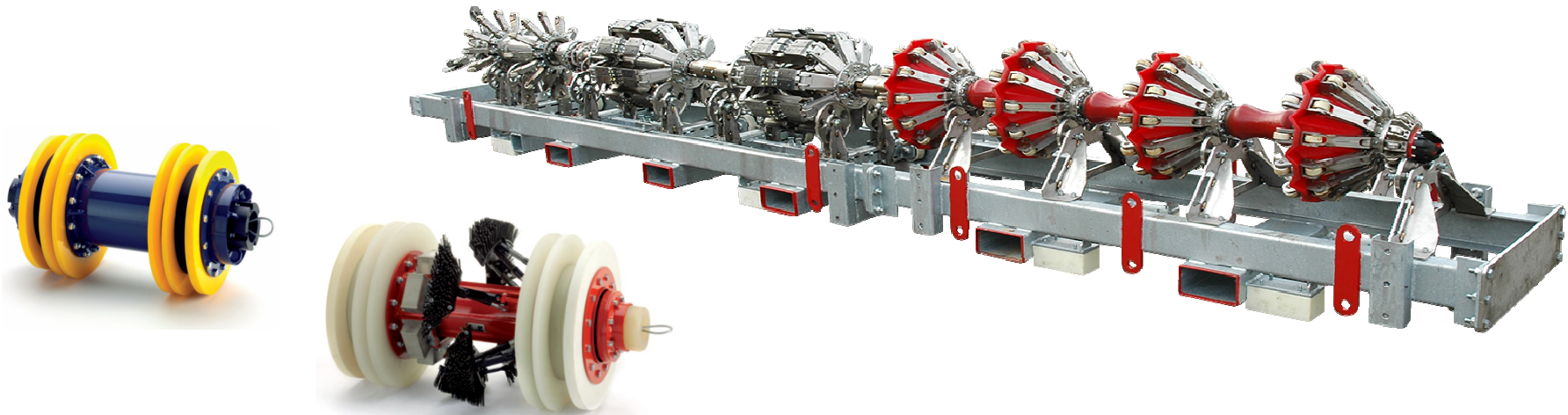


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- **In-line cleaning to maintain operational efficiency**  
(wax removal, application of inhibitor batch, black dust removal, commissioning, dewatering, condensate removal, product separation)
- **In-line cleaning in preparation for in-line inspection**  
(debris removal, passage assessment, gauge plate)
- **In-line inspection as the basis for pipeline integrity:**
- **Detection and characterization of**
  - Coating damage
  - Mill related features
  - Mechanical damage
  - Corrosion
  - Cracking
  - Long seam anomalies
- **Pigging to ensure safe, reliable and effective operation**

## WHAT IS PIGGING AND WHAT IS ITS PURPOSE?

- **Submission and retrieval** of special devices thru the pipeline during operation
- Devices are used for internal **cleaning** and for internal **inspection** of the pipeline
- Devices are **propelled by the medium** (differential pressure)

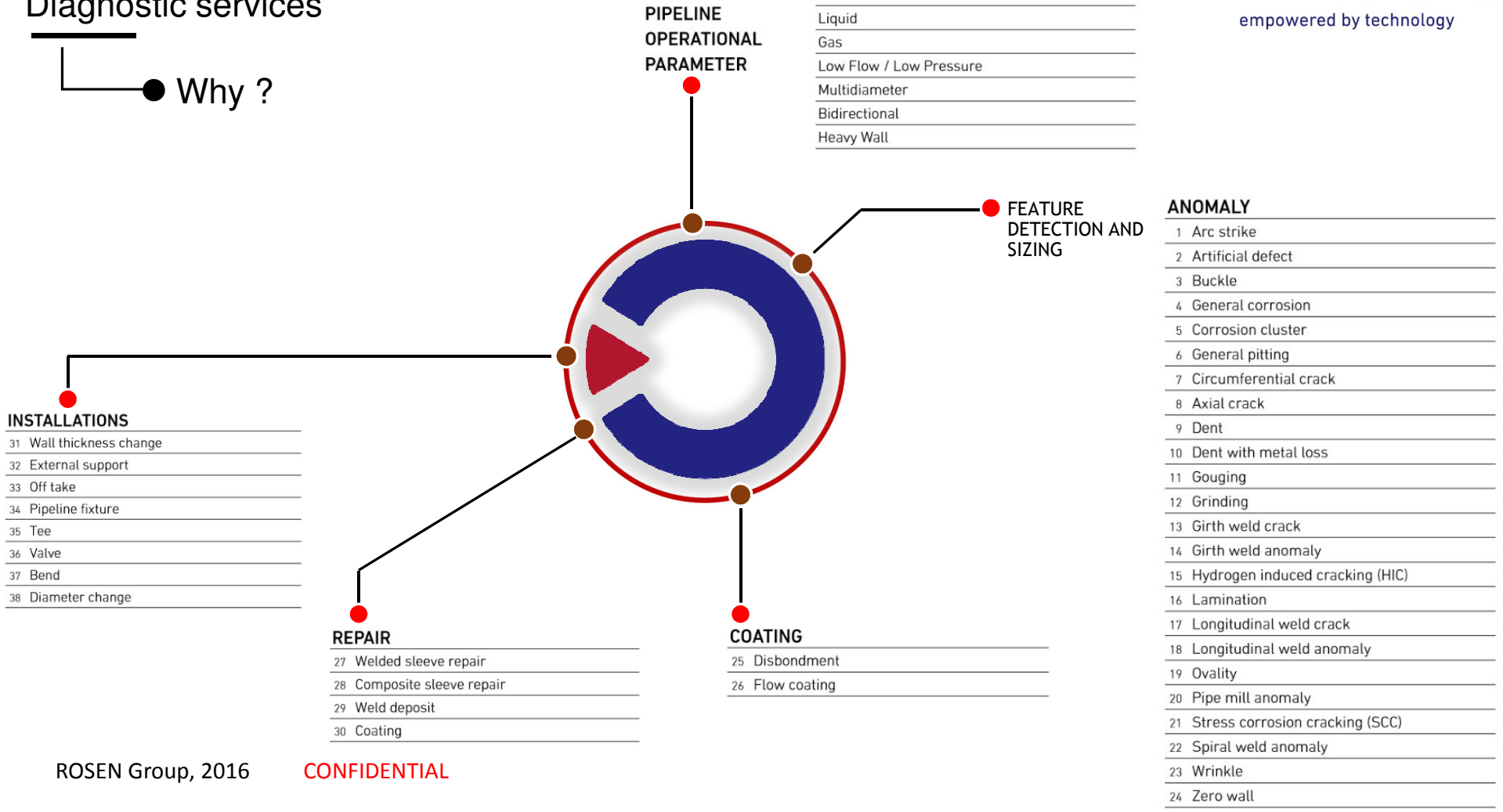




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## Diagnostic services

Why ?



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## Diagnostic services



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● How ?

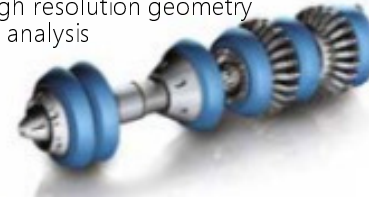
**RoCombo MFL – A/IEC**  
In-line combined metal loss and analysis



**RoGeo EC**  
Electronic caliper tool



**RoGeo XT**  
In-line high resolution geometry and dent analysis



**RoCorr UT**  
In-line high resolution metal loss detection and sizing



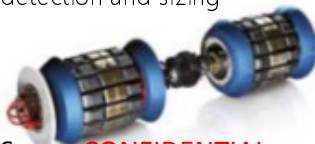
**RoCombo MFL – A/UT**  
In-line complementary combined metal loss detection and sizing



**RoCorr UTL-C**  
In-line high resolution axial crack detection and sizing



**RoCD EMAT-C**  
In-line high resolution axial crack detection and sizing



**RoCorr MFL-A**  
In-line high resolution metal loss detection and sizing



**RoCorr MFL-C**  
In-line high resolution metal loss and narrow axial feature analysis

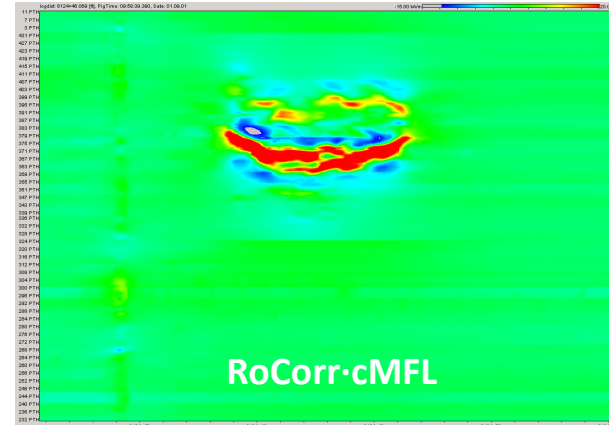
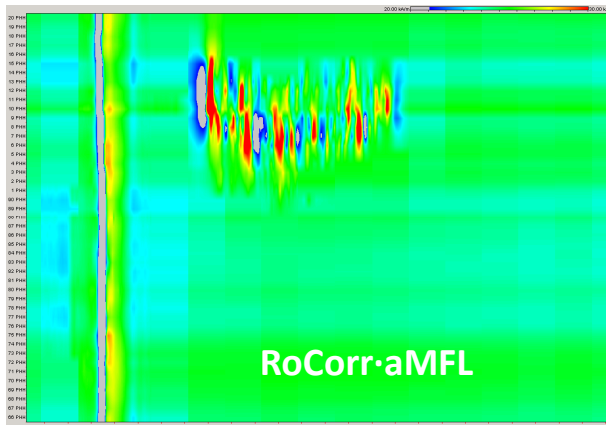
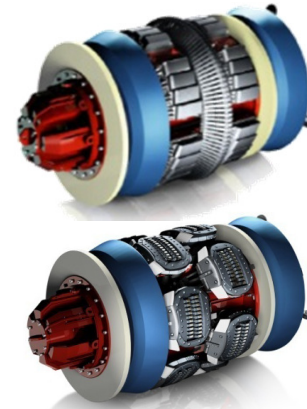
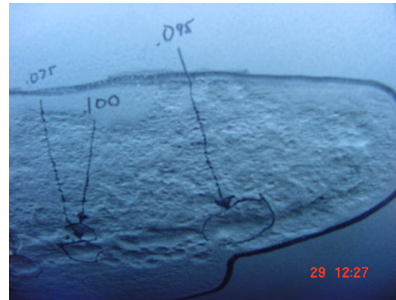
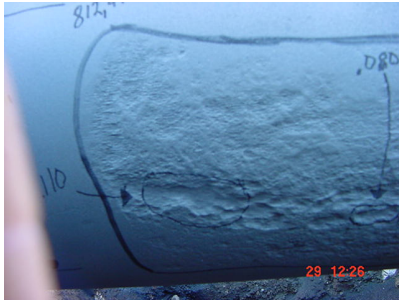


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# METAL LOSS INSPECTION

## RoCorr MFL – The outcome



## INDUSTRIAL DIAGNOSTICS BUSINESS LINE

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- Automated testing systems for the steel, tube and railway industry using ROSEN's comprehensive technology portfolio
- Non-destructive testing solutions for
  - Steel industry: testing of heavy plates, thick sheets, ribbons, rails, rods and billets
  - Pipe industry: testing and inspection of SAW and ERW welded pipes, spiral welded pipes, seamless pipes
  - Railway industry: production control of train wheels and wheel set axles, maintenance inspection of train wheel sets, solid and hollow wheel set shafts



# INTEGRITY SOLUTIONS BUSINESS FIELD

## Integrity Management Systems

### AIM System Implementation

- AIMS Review & Development
- Asset Register and Data Integration
- Risk Assessment
- Data Services

### Integrity Software Implementation

- ROAIMS Implementation & Customization
- ROAIMS Management Dashboard
- Hosted Solutions



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## Integrity Management Services

### Engineering and Consultancy

- Corrosion Control & Management
- Risk and Reliability Services
- Materials and Welding
- Specialist Studies & Testing
- Flexibles
- Stress Analysis, Fracture and Fatigue

### Integrity Assessment Services

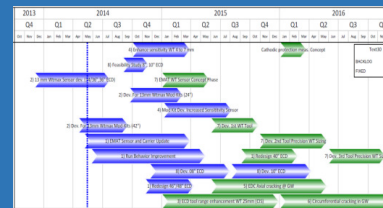
- Fitness for Purpose Assessment
- Corrosion Growth Assessment
- Strain / Stress Assessment
- Geo-Hazard Services



# INNOVATION CENTER – HOW WE WORK

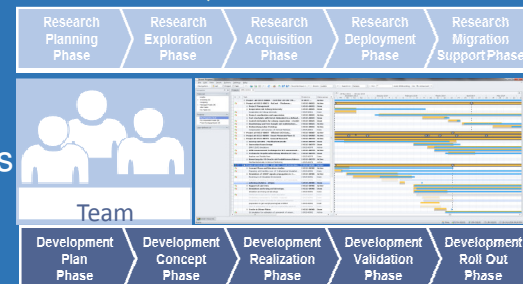
## Roadmap

- Approval of Roadmaps by Corporate
- Request of individual projects of the roadmaps by Corporate



## Project

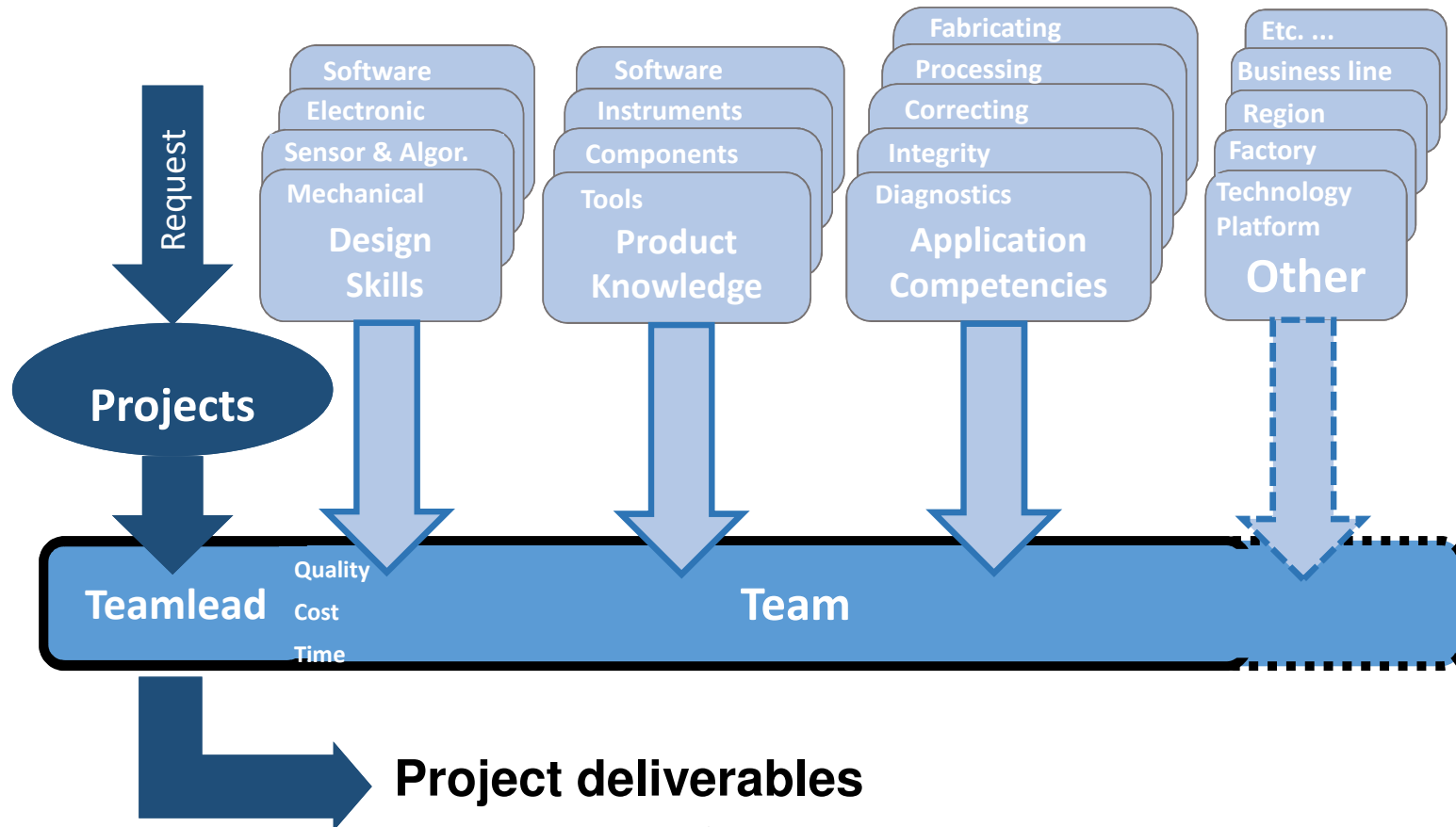
- Strong Team approach
- Project Phase and Milestones
- Project Plan



# INNOVATION CENTER – HOW WE WORK

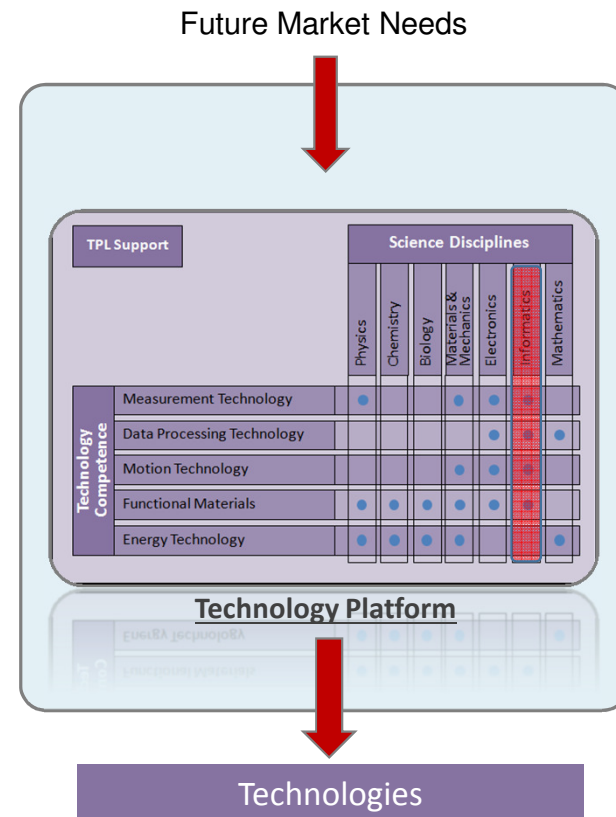


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# INNOVATION CENTER - IT

- Focus :
  - Setting up software development team
  - Local developers
  - Coding
  - Algorithm design
  
- Interaction with the uni
- Campus
  
- Internships
- Thesis (Phd/Msc)





# ROSEN GROUP A SOLUTION PROVIDER AND INNOVATOR



## ROSEN Locations



# Phase 2

## Assessment & Preparation

# University capabilities

- We would like to discuss with the Dean of the faculty
- Can the Dean explain to us specific competencies of the university of interest for us
- (Such as artificial intelligence, machine learning, big data, interface design, GIS)
- We would like to get an impression of the university, so can we get a tour?
- We would like to see examples of contracted research or research projects the UNI has worked on
- For two example software projects we would like to see:
  - Used development technologies (language, source code management, architectures)
  - Results in terms of running software (if possible)
  - Equipment of the university
  - Used development tools (development environment, database systems)

# Students

We would like to talk to 2 students in the faculty to assess their

- English skills
- Level of expertise
- Learning experience at the faculty

# Proposed Team composition & Approach

In order to get things started a complete development team covering most aspects of an implementation is desired. As we use the scrum approach in ROSEN for software development we would like to use the same approach there.

The **Scrum approach** uses three roles: [product owner](#), development team and scrum master.

1. [product owner](#) – will be from ROSEN and will work onsite with the development team
2. development team – to be provided, it is usually  $6 \pm 3$  people depending on project size, we can assume 6 people for the beginning
3. scrum master – to be provided

A project with a size of one year can be set up and is a good timeframe to measure performance. If successful we will extend and inflate the team size.

# Labor market

- We would like to understand clearly how students can be attracted ?
- We want to know how ex-students (4-5 yrs experience) can be attracted ?
- Can we maybe get a (scrum-)team that already has worked/is working together
- Maybe there is a spin-off from university already which we could attract?
- How is the general contractual situation?
- Can people quit from one day to the other
- How is the loyalty to companies in general
- We should look for people with 5+ years experience, starters and interns.
- Legal barriers we need to know

# Similar projects

- What are other players in the market (e.g. US companies having development teams there)?
- Do you have other ties with software developing companies ?

# Office requirements

- We would like to understand the conditions for renting an office for 5-10 people in UNI building/campus.
- The most important topics are security and network connection
- Network connection needs to be appropriate for video conferences and ROSEN network access (>50 Mbit is needed)



# Other

- During the meeting we will present a live case on how we work and how our projects are defined.
- We will need time for Q&A to ensue both parties are gathering all information needed to prepare next stage.