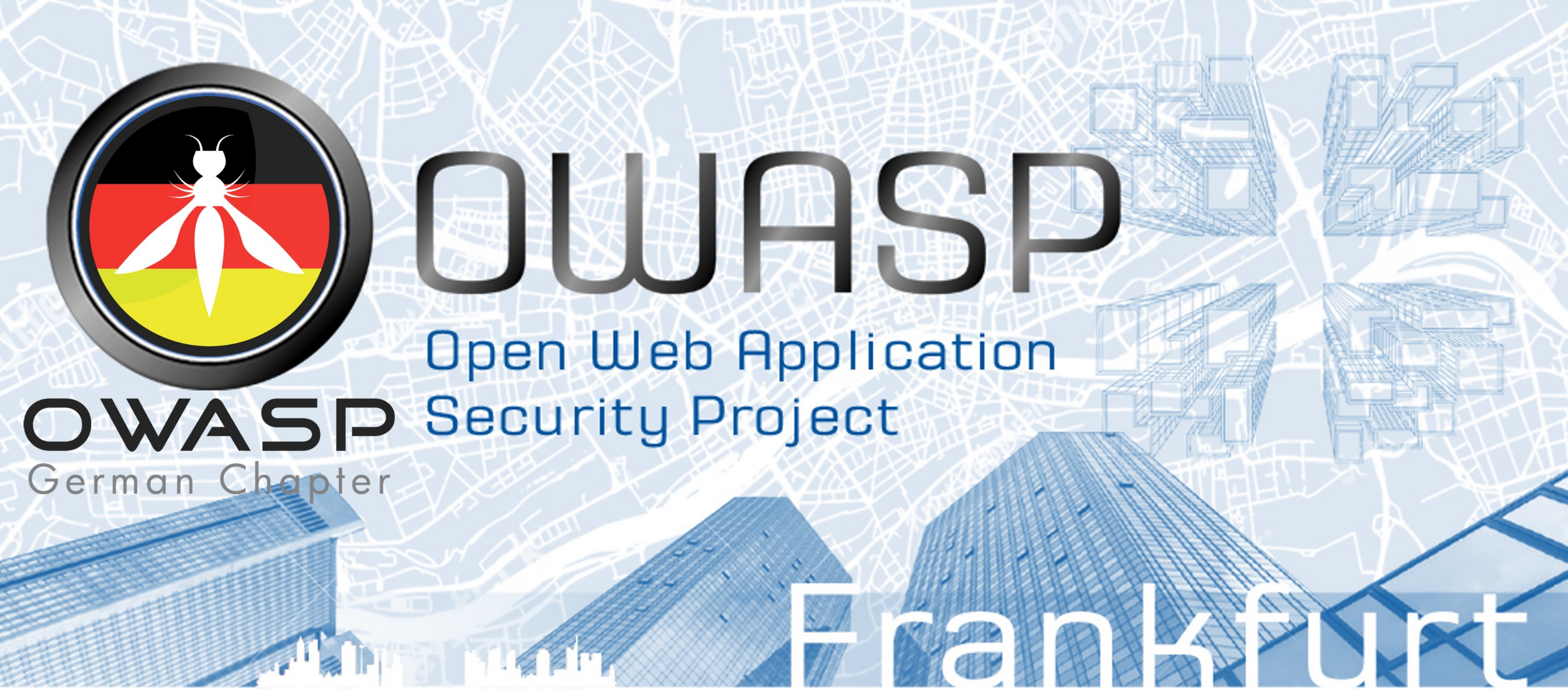


OWASP SAMM Threat Modeling: From Good to Great

Sebastien Deleersnyder, CTO Toreon

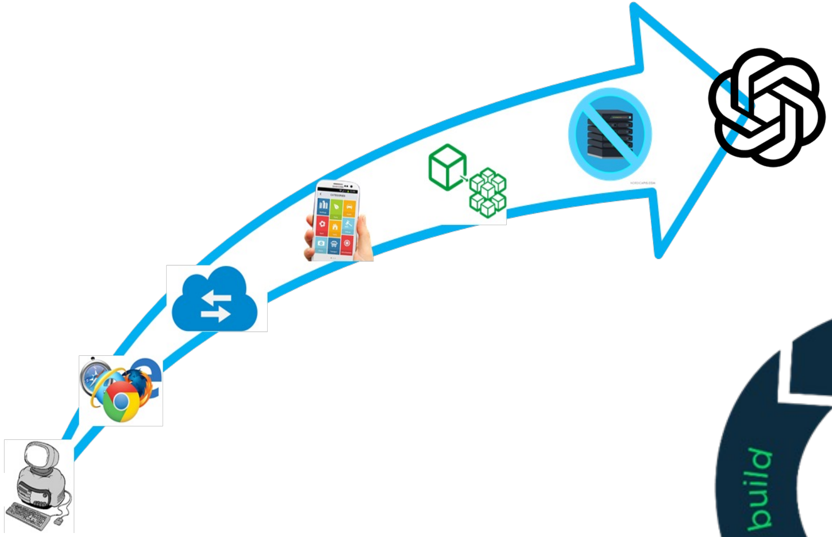
Sebastien Deleersnyder

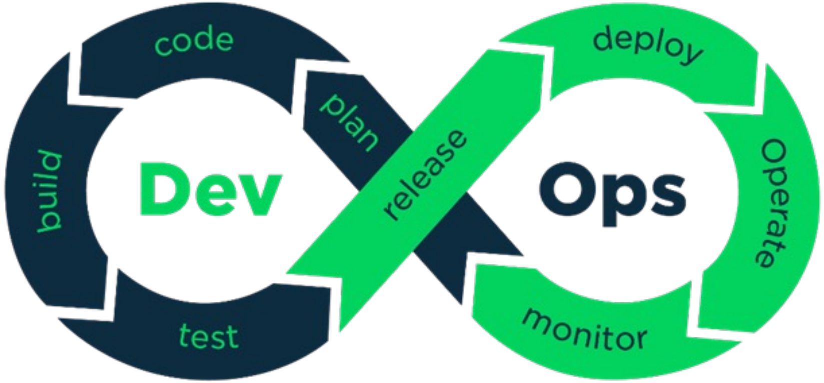
CTO Toreon
COO Data Protection Institute

OWASP Belgium chapter founder
OWASP SAMM project co-leader

TOREON
Your coach in digital security

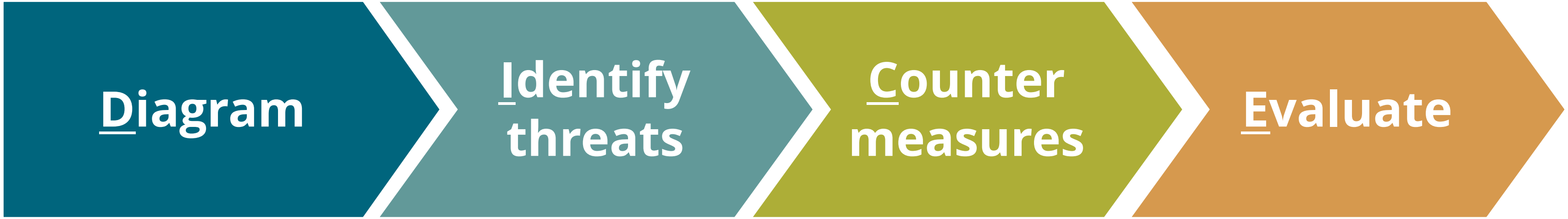
How do we keep up?





Threat modeling is the activity of identifying and managing application risks

Threat modeling – DICE framework



Diagram

Identify threats

Counter measures

Evaluate

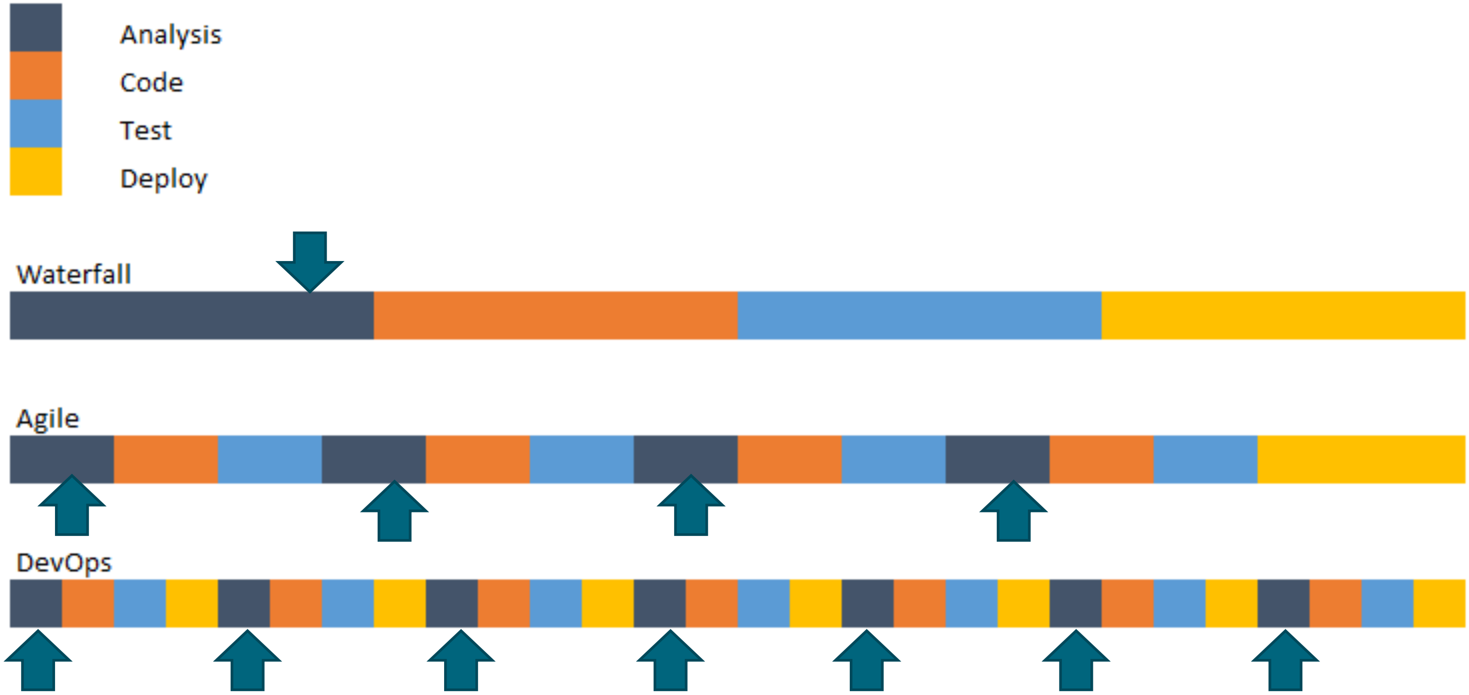
What are we building?

What can go wrong?

What are we going to do about it?

Did we do a good enough job?

Timing is everything …



Analysis

Code

Test

Deploy

Waterfall

Agile

DevOps

Advantages

Shared Vision

Flaw Prevention

Risk Identification and Mitigation

Documentation and Compliance

Challenges

Expertise Requirements

Time-Intensive

Scalability Issues

Limited Tool Functionality

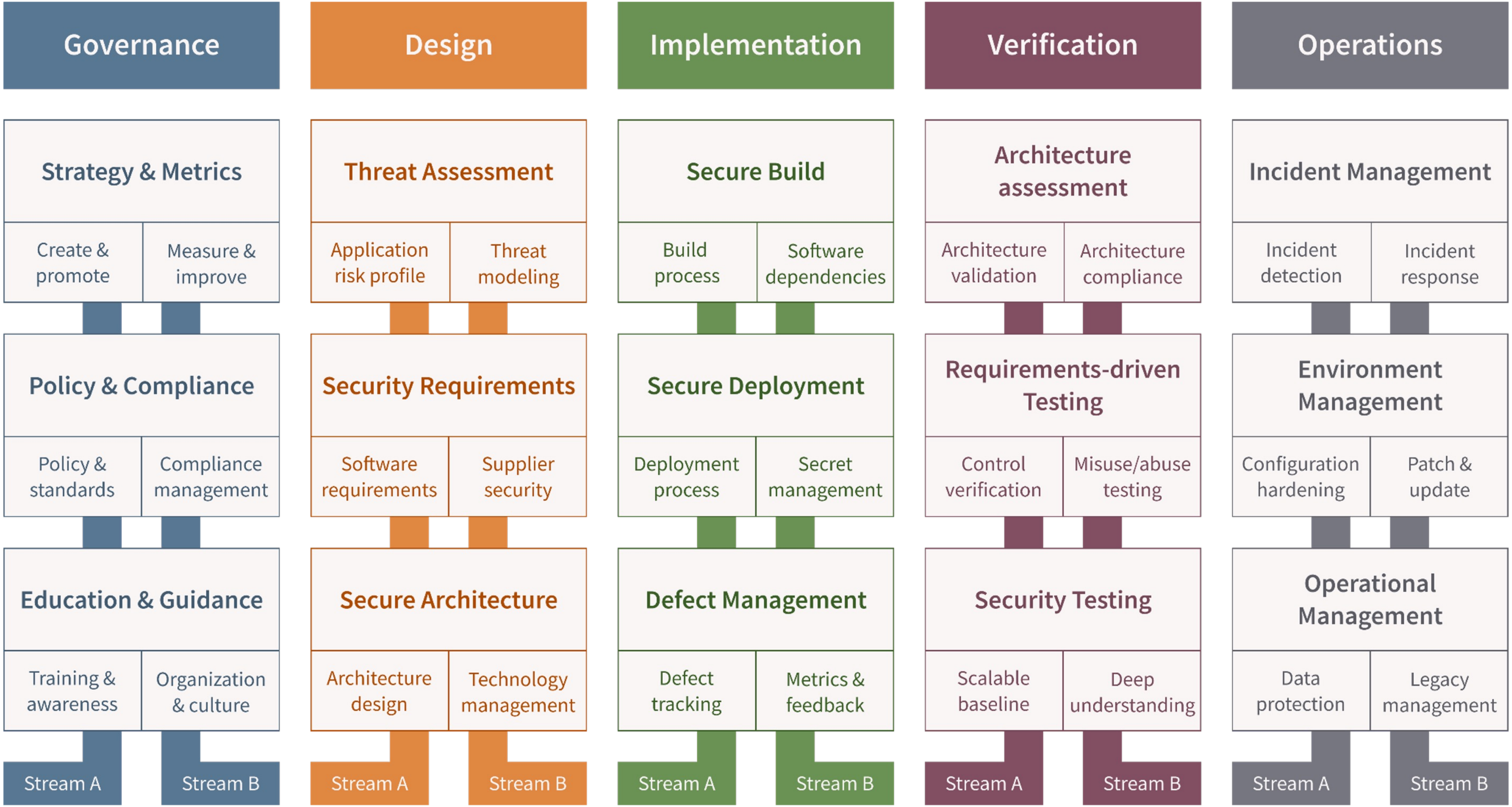
SAMM

Software
Assurance
Maturity
Model

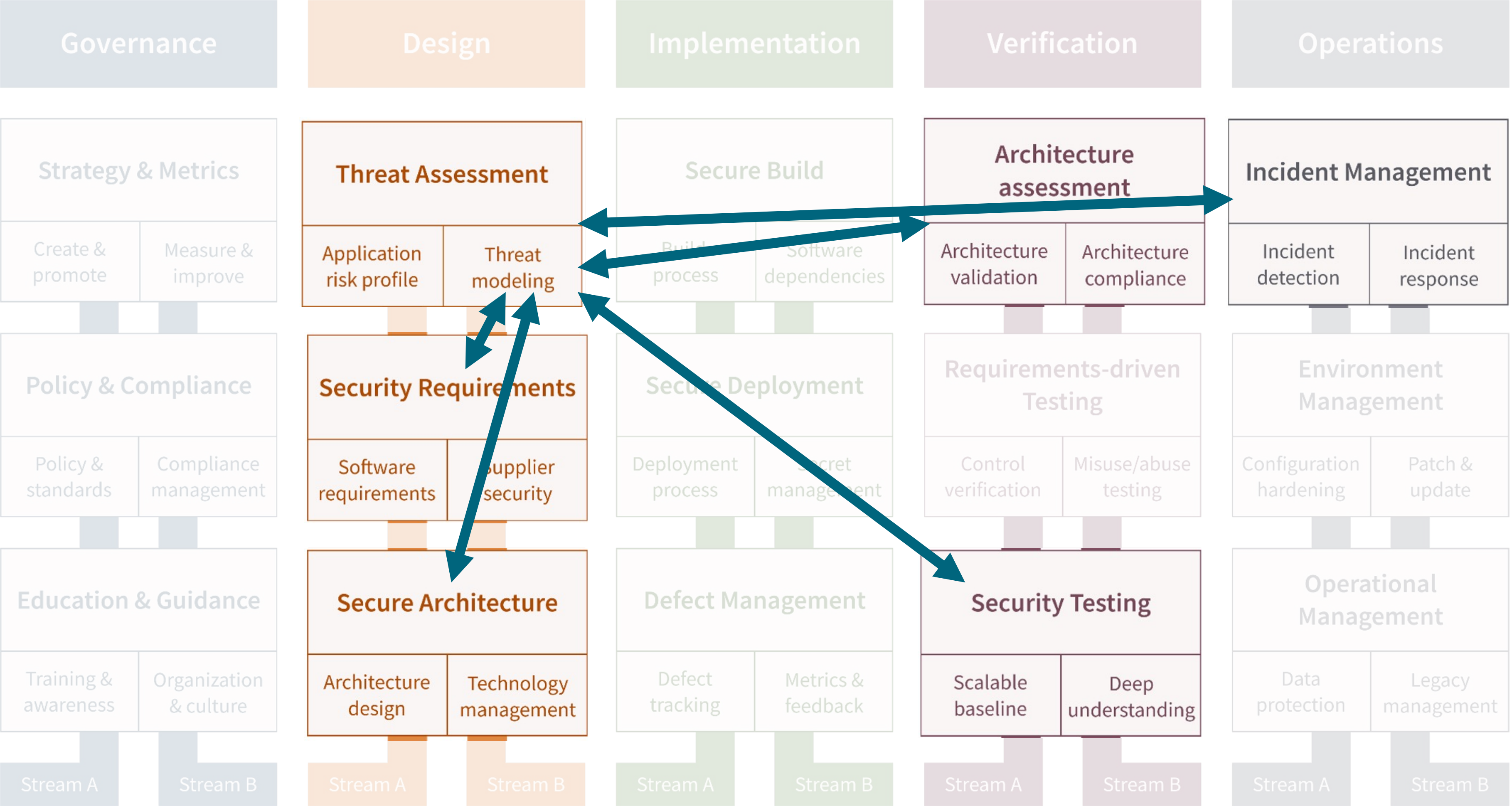
Measurable
Defined maturity levels across business practices

Actionable
Clear pathways for improving maturity levels

Versatile
Technology, process, and organization agnostic



Governance		Design		Implementation		Verification		Operations	
Strategy & Metrics		Threat Assessment		Secure Build		Architecture assessment		Incident Management	
Create & promote	Measure & improve	Application risk profile	Threat modeling	Build process	Software dependencies	Architecture validation	Architecture compliance	Incident detection	Incident response
Policy & Compliance		Security Requirements		Secure Deployment		Requirements-driven Testing		Environment Management	
Policy & standards	Compliance management	Software requirements	Supplier security	Deployment process	Secret management	Control verification	Misuse/abuse testing	Configuration hardening	Patch & update
Education & Guidance		Secure Architecture		Defect Management		Security Testing		Operational Management	
Training & awareness	Organization & culture	Architecture design	Technology management	Defect tracking	Metrics & feedback	Scalable baseline	Deep understanding	Data protection	Legacy management
Stream A	Stream B	Stream A	Stream B	Stream A	Stream B	Stream A	Stream B	Stream A	Stream B



Governance	Design	Implementation	Verification	Operations
Strategy & Metrics	Threat Assessment	Secure Build	Architecture assessment	Incident Management
Create & promote	Application risk profile	Build process	Architecture validation	Incident detection
Measure & improve	Threat modeling	Software dependencies	Architecture compliance	Incident response
Policy & Compliance	Security Requirements	Secure Deployment	Requirements-driven Testing	Environment Management
Policy & standards	Software requirements	Deployment process	Control verification	Configuration hardening
Compliance management	Supplier security	Secret management	Misuse/abuse testing	Patch & update
Education & Guidance	Secure Architecture	Defect Management	Security Testing	Operational Management
Training & awareness	Architecture design	Defect tracking	Scalable baseline	Data protection
Organization & culture	Technology management	Metrics & feedback	Deep understanding	Legacy management
Stream A	Stream A	Stream A	Stream A	Stream A
Stream B	Stream B	Stream B	Stream B	Stream B

Fulfilling Practices and improving using 3 successive objectives

0 (Implicit starting point with the Practice unfulfilled)

1 Initial understanding and ad hoc provision of the Practice

2 Increase efficiency or effectiveness of the Practice

3 Comprehensive mastery of the Practice at scale

Threat Modeling maturity levels

0 No threat modeling

1 Best-effort, risk-based threat modeling

2 Standardize threat modeling training, processes, and tools

3 Continuously optimize and automate threat modeling

Scaling up – outcome alignment

Security controls with risk levels, attacker profiles, risk appetite & assurance levels

Increase awareness and align vision for security and privacy and product teams.

Scaling up – measure success and ROI

Bring value

Justify resources

Prove ROI

1. improving security
2. reducing incidents
3. minimizing delays and rework
4. enhancing assurance and trust

Threat Modeling Program Components

Training

Templates and Patterns

SDL Integration

Governance and Strategy

Community and Culture

Tooling

Training

Provide training tailored to different roles and involvement in threat modeling activities.

Role	Job to be done	(micro) training	CPEs self paced training	CPEs in-person training	CPEs 1-1 coaching
C-level / stakeholders	Get on-board with threat modeling	The ROI of threat modeling	1		
Developer	Contribute to threat modeling (input)	TM introduction	2		
Product manager	Responsible for a threat model (business impact and TM owner)	TM intro + basic risk management	3		1
Other stakeholders	Understand threat model (output)	TM introduction	2		
AppSec Champion	Understand when a threat model needs to be created or updatec	TM intro + basic threat modeling	2	4	
Threat Modeling Engineer	To be able to create or update a threat model	Threat modeling practitioner	8	12	2
Security officer	To participate in creating or updating a threat model	Threat modeling practitioner	4	8	
Threat Modeling Expert	To be able to customize tool components and risk patterns	Threat modeling tooling expert		8	4

Templates & Patterns

Create & improve:

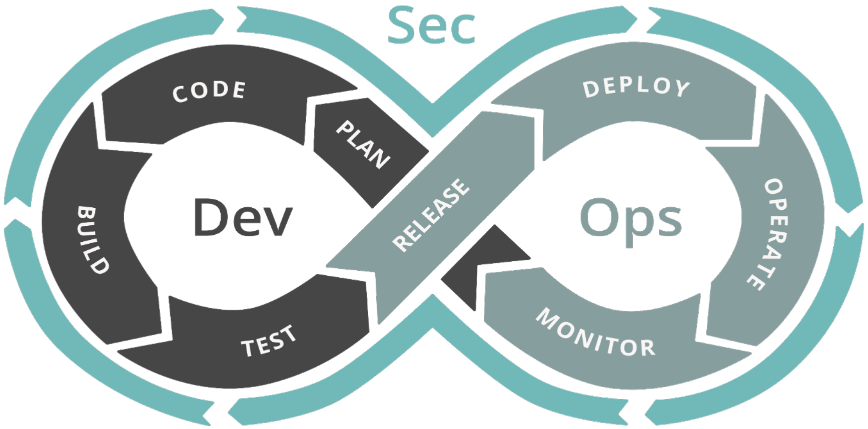
- threat modeling templates
- application risk profiles
- risk patterns (technology, compliance & requirements)

Feed with organization threat intelligence and knowledge

SDL Integration

Strengthen integration threat modeling into SDL

Define hooks into product DevOps process



Governance and Strategy

Establish governance mechanisms

Define strategy

Set Key Performance Indicators (KPIs)

Regularly monitor and report on threat modeling activities.

Community and Culture

Foster a collaborative culture around threat modeling

Organize internal and external sessions with key stakeholders to share knowledge and experiences

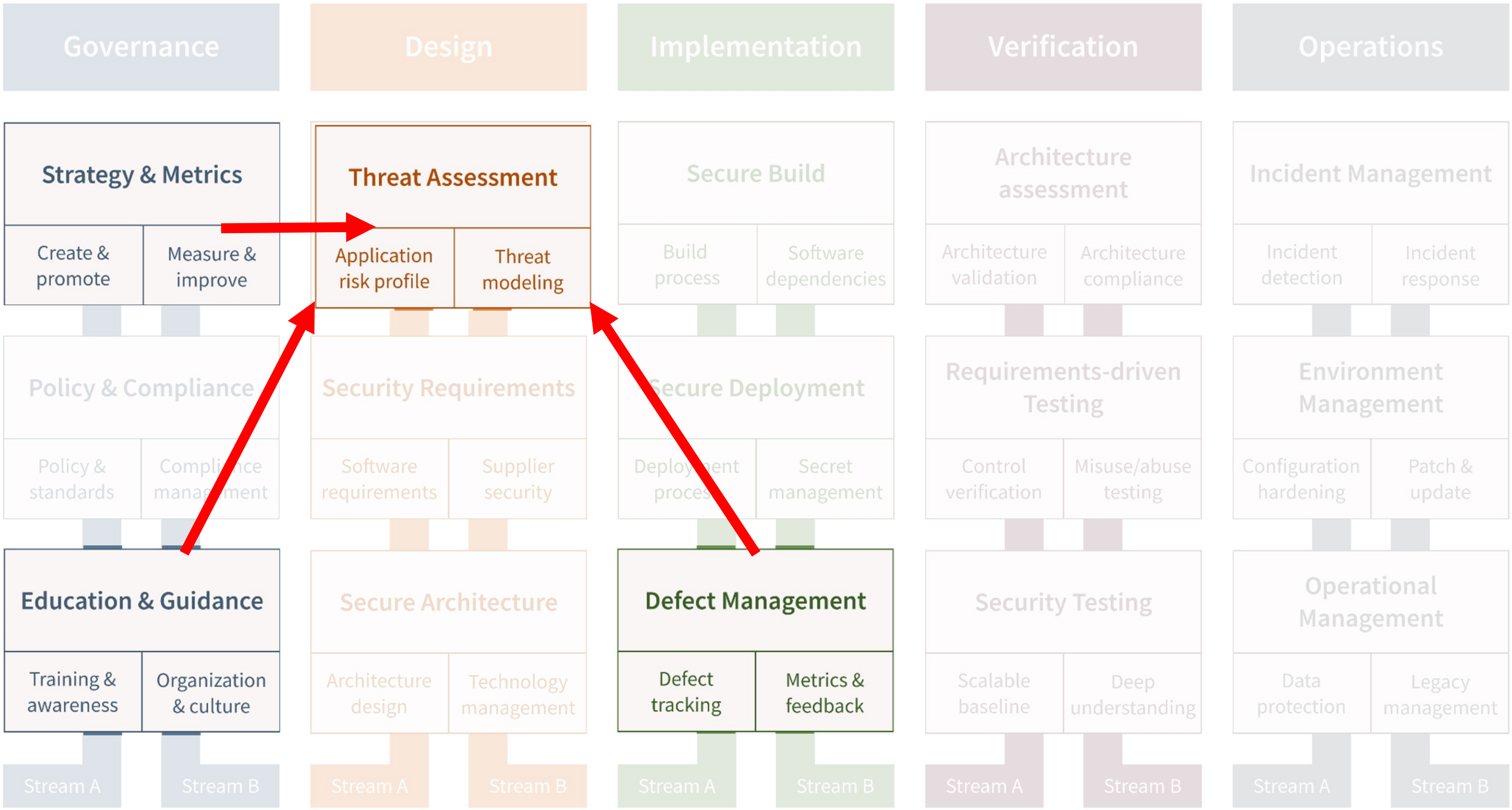
Threat Modeling Tooling

Faster

Automated (DevOps workflows)

More productive

Collaborative



Governance

Strategy & Metrics

Create & promote

Measure & improve

Policy & Compliance

Policy & standards

Compliance management

Education & Guidance

Training & awareness

Organization & culture

Stream A

Stream B

Design

Threat Assessment

Application risk profile

Threat modeling

Security Requirements

Software requirements

Supplier security

Secure Architecture

Architecture design

Technology management

Stream A

Stream B

Implementation

Secure Build

Build process

Software dependencies

Secure Deployment

Deployment process

Secret management

Defect Management

Defect tracking

Metrics & feedback

Stream A

Stream B

Verification

Architecture assessment

Architecture validation

Architecture compliance

Requirements-driven Testing

Control verification

Misuse/abuse testing

Security Testing

Scalable baseline

Deep understanding

Stream A

Stream B

Operations

Incident Management

Incident detection

Incident response

Environment Management

Configuration hardening

Patch & update

Operational Management

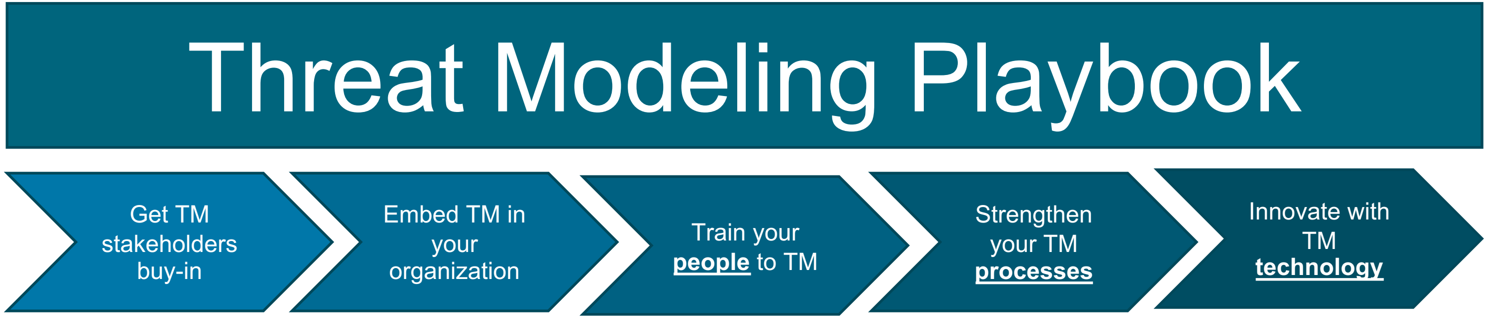
Data protection

Legacy management

Stream A

Stream B

Level up your threat modeling game



Threat Modeling Playbook

Get TM stakeholders buy-in

Embed TM in your organization

Train your **people** to TM

Strengthen your TM **processes**

Innovate with TM **technology**

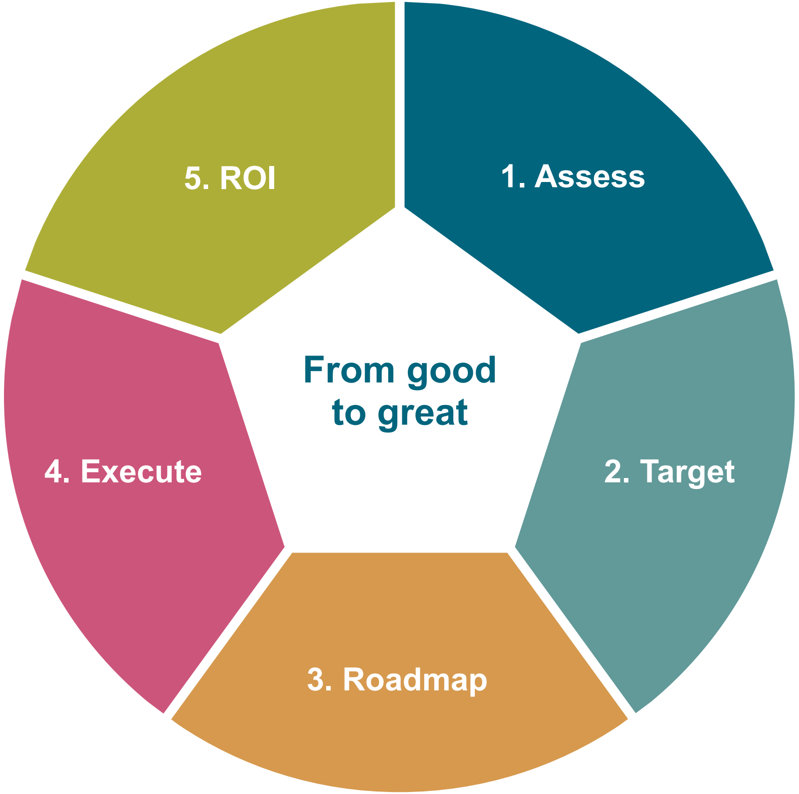
- Involve people and allocate time
- Inject TM expertise
- Show threat modeling ROI

- Establish context
- Assess and treat risk
- Monitor and review
- Communicate

- Identify stakeholders
- Create TM specialist role
- Train your people
- Create a positive TM culture

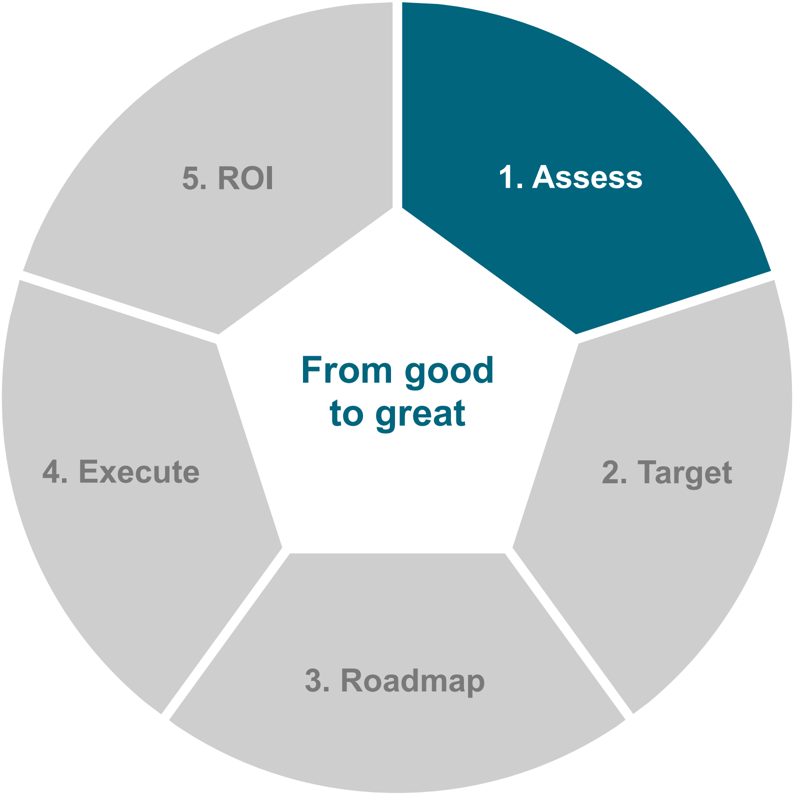
- Understand current process
- Introduce application risk levels
- Choose a TM methodology
- Perform and persist the TM
- Integrate with risk framework
- Follow up TM action items
- Optimize methodology and risk calculation

- Select the right tools
- Process the tools outcome
- Integrate in your TM methodology


1. Assess
2. Target
3. Roadmap
4. Execute
5. ROI
From good to great

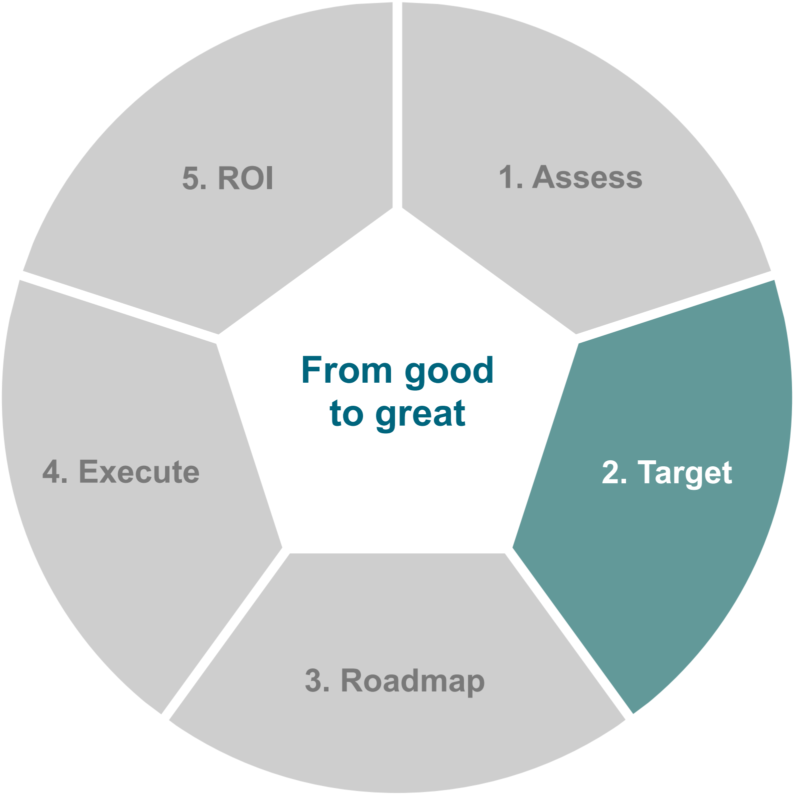
Assess Current Situation

Measure the organization's initial threat modeling capabilities and identify areas for improvement.



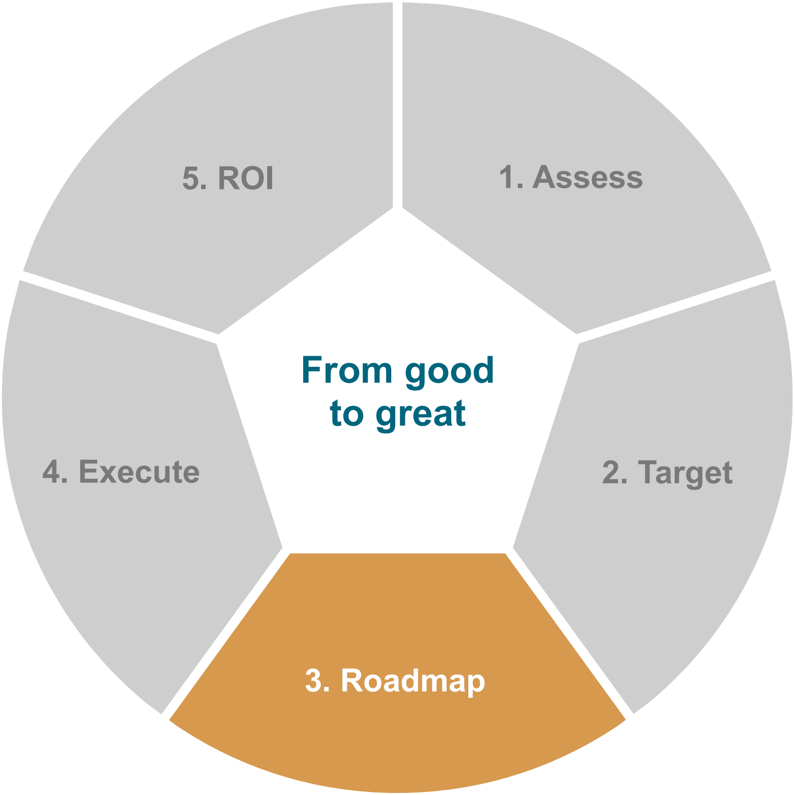
Determine Target Situation

Define the desired maturity level based on application risk profiles, compliance requirements, and organizational risk appetite.



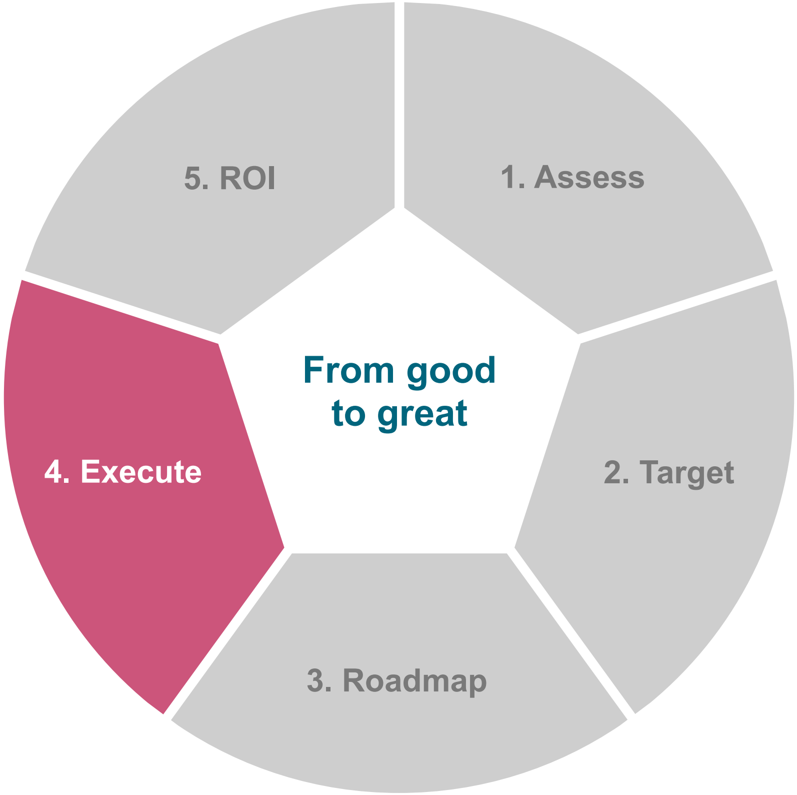
Create a Roadmap

Develop a roadmap based on the gap analysis between the current and target threat model practices. Prioritize actions and establish timelines for implementation.



Execute and Follow Up

Implement the roadmap, ensuring proper execution of threat modeling activities. Regularly monitor progress and adjust where necessary.

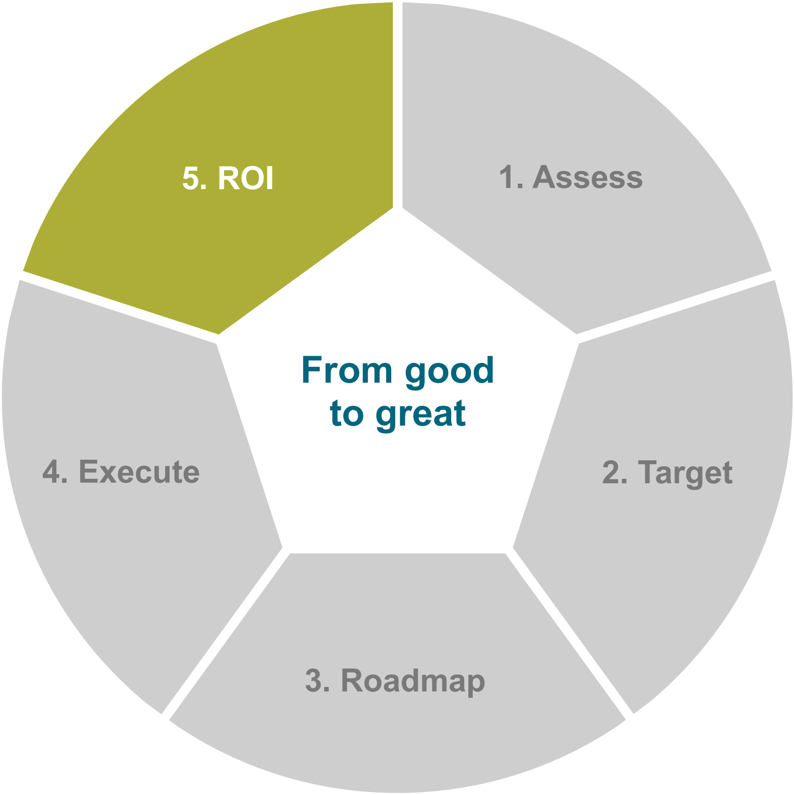


Measure and Demonstrate ROI

Make the output of threat modeling measurable to demonstrate Return on Investment (ROI).

Track improvements in security

Reduced attack surface, reduced vulnerabilities, and increased efficiency (less delays before release).



Resources

OWASP Threat Modeling Playbook (OTMP)	owasp.org/www-project-threat-modeling-playbook
OWASP SAMM	owaspsamm.org
Toreon Threat Modeling Insider newsletter	www.toreon.com/tmi-threat-modeling

Q&A

Danke

Sebastien Deleersnyder
Co-founder, CTO
Toreon
seba@toreon.com
+32 478 504 117

linkedin.com/in/sebadele/